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TABLE OF CONTENTS

ORIGINAL ARTICLES:

Hemorrhagic Septicemia in Sheep, by I. E. Newsom.....47
Western Tenderfoot Visits Golden West, by J. F. DeVine.....52
Comparing Swine Plague to Hog Cholera, by Robert Jay.....59
Your Personal Interest in Army Veterinary Legislation.....62
Veterinary Provisions of the Senate Army Bill.....62
What Every Veterinarian Should Do for Army Veterinary Legislation 64

DEPARTMENT OF LIVE STOCK POISONING.....60

Is Dogwood Poisonous? Buttercup Poisoning; Pellagra; Beriberi; Scurvy, Poison Ivy Resin; Solarnine Poisonous.

DEPARTMENT OF CATTLE PRACTICE.....69

Cervicitis or Inflammation of the Os Uteri.

DEPARTMENT OF SWINE PRACTICE.....72

Report of Hog Cholera Control, by A. L. Hirleman, R. R. Birch, R. A. Craig, E. A. Cahill and S. E. Cosford; Discussion by A. T. Kinsley.

POINTED OPINIONS 77

Bacillus Coli Communis; Strychnine Poisoning in the Horse; Scrotal Hernia in Colt; Metritis in Sow Following Parturition; Milk Fever; Eserin Successful in Impaction; Radical or Erratic Operation; Cesarean Section in Sow; Accidents to Bladders of Boars and Bitches; Mad Itch in Cattle; Lead Poisoning in Cattle; Extensive Neoplasms in Dog; Unusual Intestinal Displacement; Testicles Sometimes Overlooked in Castration; Mineral Oil Facilitates Removal of Dead Fetuses; Traumatic Pericarditis in Cow; Oil in Chenopodium Fatal to Puppies; Eversion of Rectum; Urticaria in Dog.

MATTERS OF CURRENT INTEREST.....25

Index to Advertisers.

Abbott Laboratories 2
Alexander Clear Serum Co.. 45
American Serum Co..... 8
American Veterinary Supply Co.....4th cover, 58-61
Aurora Serum Co..... 3
Becton, Dickinson & Co.... 21
Beebe Laboratories 29
Big O Serum Co..... 48
Bischoff Co., Ernst..... 64
Carter-Luff Chemical Co.... 14
Cedar Rapids Serum Co..... 32
Chicago Vet. College....27, 48
Chilean Iodine Co..... 62
Classified Advertisements... 66
Conn, G. H..... 34
Continental Serum Co..... 53
Corn Belt Serum Co..... 4
Corn States Serum Co.... 55
Crosby Frisian Fur Co..... 2
Cutter Lab. 69-77
Eagle Co. 33
Eagle Laboratories 4
Eagle Pencil Co..... 54
Elmore Serum Co..... 38
Eucamphine Co., The..... 67
Fort Dodge Serum Co....50, 51
F. O. C. Company..... 31
Fowler Serum Co..... 56
Gilliland Laboratories 4
Guilfoil Serum Co..... 26
Hamilton Chemical Co..... 58
Haussman & Dunn Co..... 32
Iodum-Miller Co. 35
Jensen - Salsbery Laboratories .....2nd cover
Kriebel & Co..... 32
Lathrop Serum Co..... 34
Lederle Antitoxin Laboratories 22, 23
Liberty Laboratories 3
List, Theo. S..... 36
MacMillan Co. 64
Missouri Valley Serum Co.. 14
Mulford, H. K., Co..... 10
Ottumwa Serum Co..... 44
Pammel, L. H..... 53
Parke, Davis & Co..... 1
Peerless Serum Co..... 24
Peoria Serum Co..... 36
Pitman-Moore Co.17, 18, 19, 20
Purity Biological Laboratories 39, 40, 41, 42
Purity Serum Co..... 63
Randall-Faichney Co..... 13
Research Vet. Labor..3rd cover
Royal Biological Laboratories .....2nd cover
Royal Serum Co.....4th cover
Searle, G. D., & Co..... 38
Sharp & Smith..... 68
Sihler Serum Co..... 31
Simonson Serum Co..... 9
Sioux City Serum Co..... .....15 and 3rd cover
Standard Serum Co..... 78
Stock Yards Serum Co..... 57
Swan-Myers Co...8a, 8b, 8c, 8d
United States Surgical Supply Co. 5, 6, 7
Universal Serum Co..... 33
Veterinary Specialty Co..... 37
Westmoreland Chemical & Color Co. 49
White, Mark 57
White Cross Serum Co..... 59
Wichita-Oklahoma Serum Co. 16
Zell-Straub Lab..... .....Front Cover and 27

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Hemorrhagic Septicemia in Sheep*

By I. E. NEWSOM, Fort Collins, Colo.
Pathologist, Colorado Agricultural Experimental Station

THE sheep industry in Colorado has assumed such importance in recent years that any considerable loss among these animals must be given due attention. Owing to the varied climatic and agricultural conditions within the state, its citizens have become extensively engaged in both the production and feeding of sheep for market. A very large proportion of the state can never be used for any other productive purpose than the grazing of live stock, and since sheep do remarkably well in our national forests the sheep-raising industry will doubtless not only be continued, but will show a marked increase. The fertile valleys which may be irrigated from the mountain streams are fruitful sources of large quantities of alfalfa which can be fed to lambs with considerable profit. Consequently, these two industries have grown up in the state, side by side, but apparently at no recent time has the production of sheep been sufficient to fill the feed lots in the fall and winter. As a consequence, the feeding lambs are gathered to a large extent from other western states, notably Wyoming, Montana, Idaho, Utah, Arizona and New Mexico. There are fed within the state each year, an average of about a million and a half lambs which go into the feeding pens during the months of October, November and December, and go out to eastern markets from three to five months later. Fully a million of these animals are fed in the Northern Colorado district, of which Ft. Collins may be said to be the center. Owing to our geographical location, we have, therefore, had the privilege of investigating a great many of the losses in the feeding lambs. For many years these losses proved to be an enigma, and while the investigations are still in progress and will doubtless continue for many years to come, we feel that we have made some slight advance in our knowledge of their cause. We have, therefore, come to the conclusion that a considerable percentage of our loss in feeding lambs may be properly said to be due to hemorrhagic septicemia. We make this assertion on the basis of the similarity of the symptoms and lesions to those described by other investigators, particularly Lignieres and Miessner and Schern; also on the frequent isolation of a bipolar organism with which we have been able to reproduce the condition in healthy animals. The investigations leading to this conclusion were given somewhat in detail at the Philadelphia meeting of the American Veterinary Medical Association, which report was published in the April and May, 1919, issue of the Journal of the American Veterinary Medical Association, and also read at the February, 1919, meeting of the Missouri Valley Veterinary Association, and published in the July, 1919, issue of the AMERICAN JOURNAL OF VETERINARY MEDICINE. It is not my intention to repeat these details, but rather to sum-

*Paper read at 23rd annual meeting, U. S. Live Stock San. Assn., Chicago, Dec., 1919.

marize in a general way these findings and to give a general discussion of the disease as it appears to us in our state.

Economic Importance

The losses in the feed lots will average about two per cent under ordinary circumstances. This includes losses from all causes and is commonly taken as the standard on which to figure results in the feeding industry. Naturally not all of these losses are due to hemorrhagic septicemia; some are due to bloating, crowding, possibly parasites, mechanical injuries, irregularities in diet, etc. However, the most of them can be directly attributed to hemorrhagic septicemia. It is very rare to have the disease take any extremely large percentage of the animals even though no treatment at all is administered. The most serious loss that we have recorded was the death of some 1,200 out of a band of 2,100, all within a few days. Generally speaking, the loss does not run above 10 per cent in any one band. It is very common to hear of losses of 50 to 150 out of a thousand animals. In the range industry, the losses in ewes and lambs are sometimes quite severe, but even there seldom run over 10 per cent in the ewes and 20 per cent in suckling lambs. It will be apparent then that while the disease seldom wipes out whole flocks, it is so universally present that the aggregate loss is considerable.

As stated above, feed lot animals are more commonly affected within two or three weeks after arriving in the pens. Ewes are particularly susceptible at about lambing time and lambs during the first month of life.

The cause of the disease as given by most authorities is the bacterium ovisepticum, consequently if we call our disease hemorrhagic septicemia, it seems quite essential that we should find this organism in association with the malady in a large percentage of cases. This we have been able to do more consistently in the later outbreaks studied than in the earlier. While we frequently fail to demonstrate the organism in a particular case, we have not failed to find it in typical outbreaks where we have had access to several affected animals. It is true, of course, that the same organism may be demonstrated in healthy sheep, and this we have been able to confirm, but we have not shown that heart blood and spleen emulsions from healthy sheep would reveal the bipolar organism, although the lungs may in some instances. We have never been highly successful in isolating the organism directly from affected animals, but by the inoculation of rabbits, either intraperitoneally or intravenously, with tissue emulsions, we have been able to recover the organism in a large percentage of cases.

Smears made directly from the tissues of sheep dead of the disease, may or may not show a bipolar organism. In fact, we believe such smears to be negative in the large majority of cases. It is even true that rabbits inoculated intraperitoneally will frequently not show the organism in smears made from the heart blood, although it is probable that there are not more than 25 per cent of such cases. Even in these cases, smears made from the peritoneum will show their presence in large numbers. The fact that with pure cultures of these organisms, we can duplicate the symptoms and lesions found in the original cases, seems to give us strong evidence that the disease in reality is hemorrhagic septicemia and is due to the bipolar bacteria.

Predisposing Causes

That the bipolar bacterium is alone the cause of the trouble is of course not believed, as there are undoubtedly many conditions which render the animals peculiarly susceptible to the disease. In fact, we believe this so strongly that we are almost led to say that if these predisposing conditions could be controlled, the disease could be handled without the necessity of immunizing directly against the organism. Just what these predisposing causes are and why they operate, we are unable to say, but we are fully imbued with the idea that the exposure incident to shipping is a large factor. We are not at all sure that this exposure means an exposure to a virulent infection, since it seems possible to us that the organism may be normally resident in the animals and the lowering of the vitality causes it to assume virulence. On the other hand, there are instances which would indicate that the exposure to the infection is the chief factor.

In this connection, it may be well to give a specific instance which recently occurred. Forty-nine hundred lambs were

gathered together in Montana, shipped to Denver, and there divided into three lots and all weighed and shipped out on the same day. One of the lots consisting of 2,300 came to Ft. Collins, where it was divided into two equal parts, one going about seven miles north and one about nine miles east. The other two lots consisting of 1,600 and 1,000, respectively, were put into feed lots seven miles west of Ft. Collins and one mile south. Within about eight or ten days after arrival the sheep began to die in all of these bands, showing approximately the same symptoms and lesions, and from them we were able to isolate the bipolar organism. This would seem to indicate that the conditions which rendered the sheep susceptible were in operation while all of them were together—in other words, during shipping to Denver or at the Denver yards. It may further indicate that the period of incubation is about 8 or 10 days. On the other hand, we have in our records a case where several train loads of animals were gathered in the states north of us and shipped to Ft. Collins. One lot of 4,000 began to die within eight days after arrival, with a total loss of 225 within a week's time. The other sheep gathered at the same time and sent with this lot of 4,000 remained healthy, although having been separated from it on arrival at Ft. Collins.

The system of feeding may have a great deal to do with the susceptibility of the animals. There is a feeling on the part of some that high protein diet renders all animals susceptible to the bipolar organism. While it is true that our feeds are very high in protein, we have no definite data either for or against this supposition. We have no doubt that when the conditions are fully analyzed that methods of feeding and kinds of feed will be found to be a factor in predisposing to the disease. We have naturally thought that weather conditions were also a considerable factor, but there have been many happenings which would tend to shake our faith in this explanation. I have in mind one instance, where following a loss of about 80 head, the band consisting of 1,600 was vaccinated. That night and all the next day there was an extremely cold disagreeable rain, but in spite of this only four or five more animals were lost out of this flock. Animals came down with the disease without having been fed grain at all, so that we no longer attribute any considerable importance to the grain fed. It happens that the malady usually appears in the feed lots during the first two weeks after the arrival of the lambs, and it is of course during this time that the animals are being put on grain. This led to our earlier supposition that the grain feeding was a large factor in the causation of the disease.

Transmission

Whether the disease is actually transmitted from one animal to another, or whether the outbreaks appear owing to the animals being placed under the same predisposing conditions, we are unable to state. In no case in our experimental work have any sheep come down with the disease from association with affected animals, although we have in a number of instances put presumably susceptible sheep in the pens with those which had been inoculated with virulent cultures. For some three years now, we have been destroying sheep in our experimental work with pure cultures of the organism, and we have repeatedly put in healthy sheep to see if they would contract the disease, but always with negative results. This is another reason why we presume that predisposing factors are of great importance. If the organisms are transmitted from one animal to another, and we have no doubt that they are, the opportunities for such transfer are of course excellent since sheep are always herded closely together and eat and drink out of the same troughs. We have been able to produce the disease only by the intravenous inoculation of the organism. We have given as high as 60 c. c. of a bouillon culture by mouth and 20 c. c. subcutaneously with negative results. We have not tried inhalation experiments.

Our observations do not confirm the belief, held by some, that the disease is transmitted to other species, since it is a very common practice to feed the dead sheep to hogs without any transference of the malady. Chickens also pick on the carcasses of animals dead of this disease without showing any subsequent symptoms of cholera.

Symptoms

In discussing symptoms and lesions, we find it necessary to differentiate between the acute and chronic types of the disease. In the acute type, the disease is often so rapid in its manifestations as to produce death before any symptoms are noticed. It is not uncommon for an owner to find dead in the morning from 5 to 10 head of lambs that were not known to be ill the night before. This type of disease almost always affects lambs that are otherwise strong and vigorous and in a good state of flesh. In fact, the owners frequently tell us that the disease is taking the very best of their animals. The sheep, however, are usually sick a few hours before death and if seen will be found with the ears drooped, head down, showing dullness and listlessness, not eating, and may have a slight drooling from the mouth and nose. The temperature at this time will run from 104 to near 108°, the highest temperature which we have ever taken being 107.8°. On examination of the axillary space or the inside of the thighs, it is sometimes possible in these acute cases to see hemorrhagic spots under the skin. The breathing may be somewhat labored and the heart may be beating more rapidly than usual. Lameness in one limb is also frequently noticed. Cerebral symptoms may sometimes manifest themselves, particularly in suckling lambs, as evidenced by walking in a circle with the head turned to one side, but this symptom is more apt to be present in the chronic type.

In the chronic type of the malady the symptoms vary according to the localization of the organism. We have been accustomed to describe pneumonic, enteric and cerebral forms. To this we should probably add also the nasal. It seems rather peculiar, but we seldom see much mixing of these forms; by this I mean that if we find the affection to be in the lungs of one animal, it usually runs as pneumonia throughout the band. Whereas, if the cerebral type is common, as it usually is in suckling lambs and in lambing ewes, there are seldom if any pneumonic lesions and not much intestinal disturbance. In some instances, we find a mixture of these lesions but not as a rule.

In the pulmonary form the respirations are audible and labored. The temperature usually runs from 102 to 105°. There is considerable dullness, loss of appetite, discharge from the nose, and rapid emaciation, the latter symptom being common to all of the chronic cases. The disease runs from three to four days up to two or three weeks and usually results in death.

In the enteric form there may be a bloody diarrhea, with a normal or even subnormal temperature; extreme weakness in the latter stages, with death following in from three to seven days. Many of these cases, however, recover without treatment.

In the cerebral form, walking in a circle is distinctive, with the head turned to one side, blindness, finally going down and becoming comatose. They may lie in this comatose state for as long as two weeks before death takes place.

For the sake of completeness, I shall describe the nasal form, but I have no definite knowledge that this is in reality a form of hemorrhagic septicemia. In this form there is a mucopurulent discharge from the nose, a matting of the wool around the eyes, some coughing and sneezing, temperature remains normal, but the disease is extremely chronic in character and seldom causes death. It may last for months, oftentimes with the animals continuing in a good state of flesh. Usually, however, it is associated with emaciation.

Lesions

The lesions of course vary according to the type and to the form shown. In the acute type, the lesions are almost wholly hemorrhagic in character. These hemorrhages may be extremely numerous under the serous membranes throughout the body. This means that there may be subpleural, subpericardial, subperitoneal and frequently subcutaneous hemorrhages. On the other hand, animals may die of the acute type without showing any hemorrhages whatever, but this is rather the exception than the rule.

Quantities of straw-colored serum are frequently found in the pleural and pericardial cavities in this type. In some instances the fluid, particularly in the pericardial cavity, has coagulated. The mucous membrane of the trachea and larynx is deeply reddened. The blood frequently has a purplish hue. The whole of the fourth stomach and first portion of the

duodenum may be deeply reddened as a result of hemorrhages into the wall. The lymph-glands are almost always much swollen and deeply reddened. Carcasses of animals dying with the acute type undergo postmortem decomposition very rapidly.

In the pulmonary form of the chronic type there is usually a fibrinous pleuritis with adhesions between the costal and pulmonary pleura. The lower portion of the apical and cardiac lobes is usually solidified. There may be circumscribed spots throughout the lung tissue, indicating that the disease started in isolated lobules. These spots are grayish in color and necrotic in character.

In the enteric form there is apt to be reddening of the mucous membrane of the fourth stomach, first portion of the duodenum, and in small areas throughout the intestines. Ulcers may also be present.

In the cerebral form, there may be no lesions whatever outside of the head. Occasionally, however, there will be a small pneumonic area in the lungs; the membranes surrounding the brain will be found to be congested, and the mucous membrane of the nasal cavity and sinus is nearly always deeply reddened. In the nasal form there is swelling of the mucous membrane. The mucous membrane of the nose and sinuses may also be covered with mucous and pus.

Value of Vaccines

There has been much discussion as to the value of vaccine, inasmuch as the disease is so erratic that it often dies out without any treatment. It has not been possible in any of our work to vaccinate only half of an infected herd. We are, however, now engaged in vaccinating one-half of a number of herds for purely preventive purposes, there being no considerable loss in any of them. We are hoping at the end of the present feeding season to be able to have some data on which we can speak with assurance about this question. Many thousands of animals have been vaccinated during the past three years with generally satisfactory results. In a few instances vaccine seems to have had no effect whatever on the course of the disease. We recall that in one case vaccine was administered to a small band of sheep, five different times during a period of about two years, and in spite of this, occasional losses occurred. In another instance, in a band of 1,100, we waited for about a month for the animals to stop dying before administering vaccine. While they were not dying rapidly, an occasional one was lost, so that at the end of a month there had been a loss of about 40. After the administration of vaccine there was no further loss for about ten days, when the losses continued as before treatment. While it never proved very serious, there was a loss of 22 head during the rest of the feeding season. The owner was dissatisfied and so were we. On the other hand, we have recorded an instance in which we waited from October 12 until November 10, approximately one month, for the animals to stop dying, during which time there had been a loss of approximately 60 head, with about 40 sick. Following vaccination, four animals were lost during the rest of the feeding season. We feel that we have demonstrated experimentally that immunity can be had against the organism of hemorrhagic septicemia, and we feel further that the results in the field have been generally satisfactory. Consequently, we are advising its use in herds where the disease exists, being careful, however, to state to the owner in each case that in a few instances vaccination has not been satisfactory and that the disease may stop at any time without treatment.

In its erratic course, the disease differs in no way from the same malady in other animals, since we recall some instances where we advised vaccination in cattle after a rather heavy loss from what appeared to be this disease—in which our advice was not taken and in which the disease stopped as suddenly as it had been begun. The disease in chickens and hogs runs very much the same course. It is of course difficult to say under such conditions whether any line of treatment has been of value, but if our investigations continue, we hope at some future time to be able to say with some definiteness that this procedure which is now so commonly used is or is not of real service.

Whether disinfection of cars, public yards, and feeding pens following an outbreak would have any influence on the disease, we do not know. We have not been accustomed to advise disinfection following outbreaks, and while the disease

may be due to a particularly virulent type of organism picked up at some point in transit, we have rather leaned to the belief that the predisposing causes were a greater factor than the contact with the virulent bacillus. The fact which is now commonly reported that hemorrhagic septicemia in cattle was less prevalent during the time of the disinfection of yards and cars on account of foot-and-mouth disease is very significant, and if this means that virulent organisms were kept down, then the same results would probably be secured with sheep. We feel that it is entirely too early to make recommendations on the regulatory side, as these should be based upon accurate investigation.

Eastern Tenderfoot Visits Golden West

By DR. J. F. DE VINE, Goshen, N. Y.

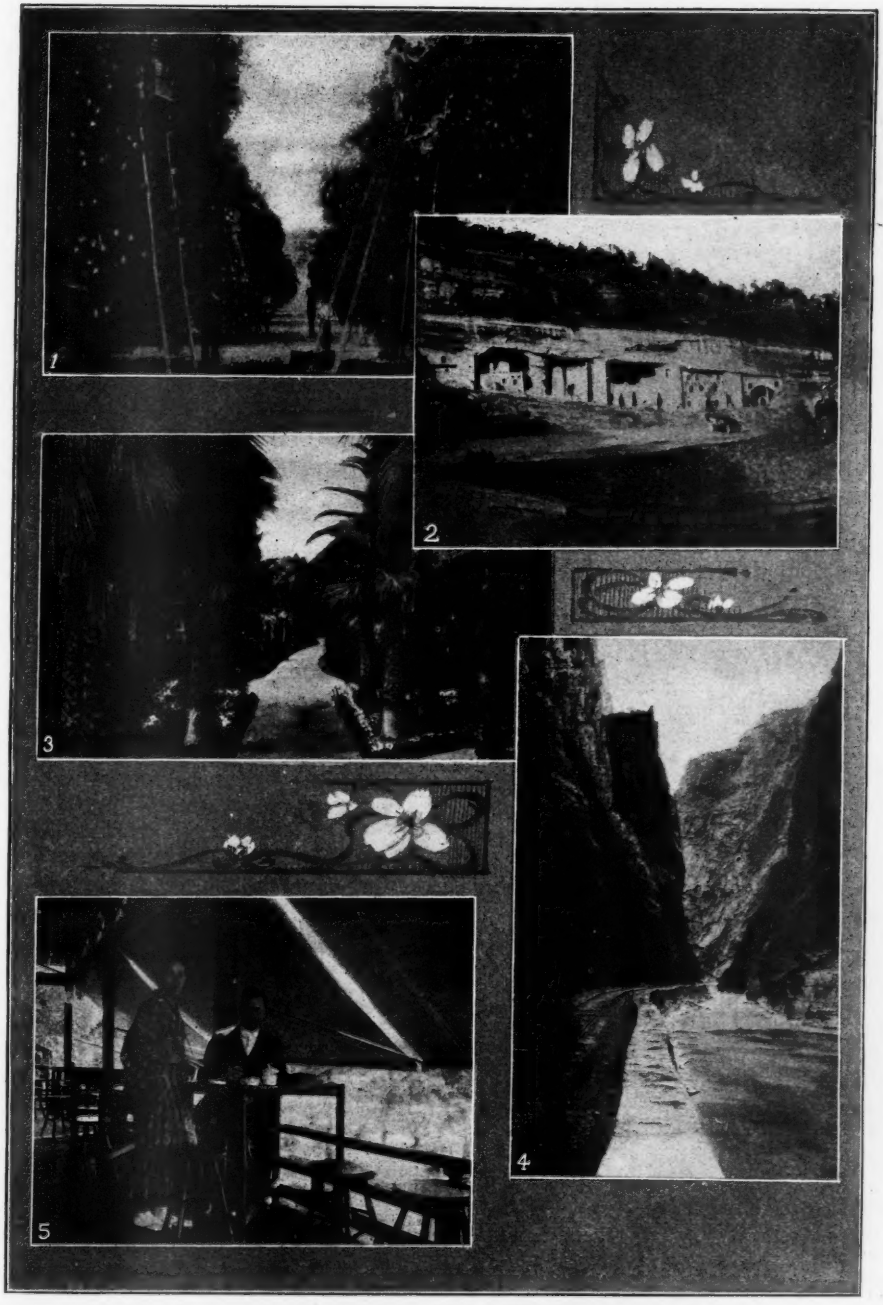
WE had traveled over a good bit of the United States, seen some of Canada, visited Newfoundland, and Nova Scotia, touched on Labrador, and explored a few countries of the old world but never had we been further southwest than the regions of Kansas and Missouri, and believing that some others like ourselves who have traveled but little, might find in our impressions something of interest, and the seasoned traveler find amusement in the ridiculous viewpoint of a tenderfoot, we decided to put our views and impressions on paper. I have often wished I could know the thoughts and impressions of my friends and others, when they visited new sections and met new people. I think we are all more or less childlike and often "take in" more at first sight than on subsequent visits and observations.

Having received a request from a good client to go to California and advise with his veterinarian on some problems pertaining to his valuable live stock, I left New York on the Lake Shore Limited, June 6, at 5:30 p. m., reaching Chicago at 4 p. m. Central time, June 7th, taking the California Limited on the Topeka, Atchison and Santa Fe out of Chicago the same evening at 9:30. We pulled out of Kansas City Sunday morning, June 8th. I was seated in the diner enjoying some of Harvey's good bacon when the conductor called "All aboard!" In a short time we were out of the suburbs and winding along the old Kaw River, as it is known locally, although the geographies call it the Kansas River. Two things in particular attracted our attention. First, the number of people working in market gardens on Sunday, women and children predominating. Second, the thousands of acres of the most beautiful timothy. The fields stretching as far as the eye could reach, with high green grass as sturdy and undulating as a field of rye or wheat with not a weed to mar its beauty or a stone to interfere with its harvesting. Farther on the wonderful stands of wheat, alfalfa and oats caused us easterners to wonder if this virgin soil would ever wear out.

Dr. J. F. DeVine from the effete East, prior to his trip to the "Wild West."

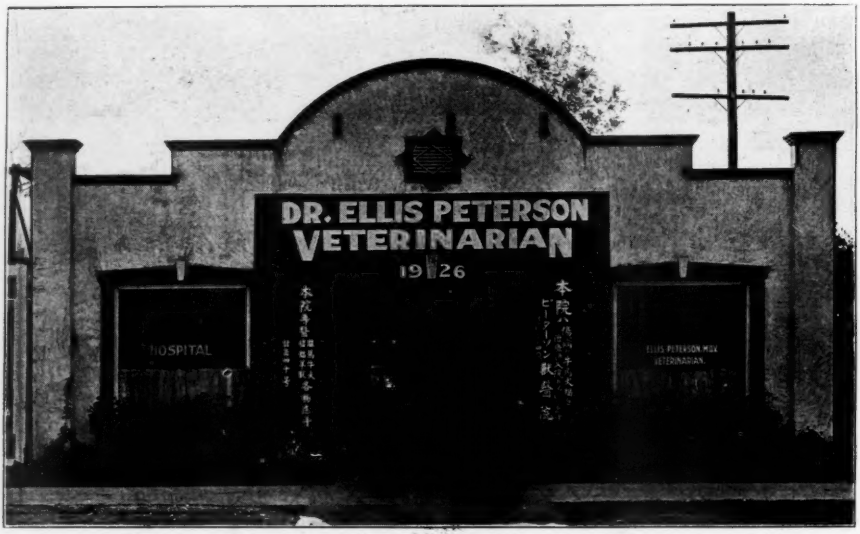
To us from the east who must constantly feed our soil to get results, a trip to the west gives the poetic idea, symbolized by the phrase "In the land of the golden west," tangible form.

After leaving Topeka we soon reached the wheat belt. Nature had been good to the Kansas farmer. The plentiful spring rains gave the brown fields of turning winter wheat the appearance of a vast sea that had no ending.



SOME VIEWS IN THE SOUTHWEST

1. Orange grove near Los Angeles. 2. Reconstructed abodes of Cliff Dwellers in the Garden of the Gods, Colorado Springs. 3. Walk bordered by date palms leading to Santa Fe depot, San Diego, Cal. 4. Royal Gorge, Colo. 5. Japanese tea house at San Diego—Geisha girl serving tea.



Hospital of Dr. Ellis Peterson, Sacramento, Calif.
The Japanese and Chinese signs indicate the wide scope of Dr. Patterson's practice.

From Topeka to the Colorado border, a distance of about 400 miles, it is predicted that there will be gathered more than one-fifth of all the wheat raised this year in the United States.

At Dodge City we again set out watches back another hour, leaving there at 7:30 p. m., Mountain time (9:30 p. m. Eastern time), reaching the border of Colorado at 9:30 p. m., too late to see much of this state.

As we lay in our sleeper we could hear the faithful old engine chugging away and fighting the grades from Holly to Simpson's Pass, a rise of about 8,000 feet above sea level.

Around midnight we were entertained by a man with a boisterous attack of nightmare, so weird and bewildering that some of the ladies suffered hysteria. Excitement ran high for a time, the predicaments of some of the unadorned being both pathetic and amusing.

Monday morning June 10th, found us in New Mexico, in a region of barren soil, valleys and mountain foothills, sprinkled with evergreens and patches of black gamma grass. Animal life was manifest by a few horses and cattle. This character of scenery prevailed with an occasional Indian Reservation and its flocks of goats until we neared Albuquerque.

The Indian Reservations are mostly interesting to an easterner. The adobe houses are one-story, flat-roofed mud buildings, and from the time we passed the frontier until we reached Albuquerque we saw not more than a dozen frame or concrete houses, and these we were told were occupied by government agents.

Leaving Albuquerque we could see the snow-capped peaks of the Gloretta and Santa Fe Mountains.

Notwithstanding the forlorn and barren outlook the country presents to the traveler by train, natives told us that back in the valleys cattle roam the hills and live out of doors twelve months of the year and that steers fattened on this grass complete in the large markets with grain fed animals.

At Albuquerque we found a nicely kept depot of splendid architecture and modern concrete construction.

If one is not to explore the better parts of New Mexico and Arizona it is best to turn back here, since a train ride from there on over the deserts and foothills, with sparse vegetation and now and then a "grease wood shrub," is sure to destroy any allurement the west may have for the average person. Those familiar with the country try to point out that some of this land is desert and some is not, that

some of it is mountainous and some is not, but to us it all looked as if Nature had intended it for the sole benefit of the novelist and the "movie" promoter. This large, open, mountainous sandy country is just as we have seen it pictured and heard it described, but it seems one must see it to realize its vastness.

At last this mountainous lifeless, region gradually gives way to interesting surroundings and as we descend into San Bernardino, a drop of about 4,000 feet in rather a short distance, interest centers in the winding descent and the efforts of the trains coming up, four engines being required for a comparatively short train.

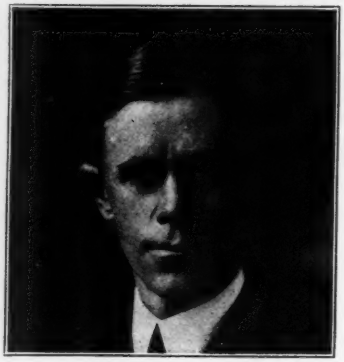
The evidence of moisture from irrigation gradually prepares one for entrance into that wonderful Garden of Eden, Lower California.

The Californian boasts that anything that can be raised or grown in any other part of the United States, can be raised and grown in California. This seems literally true of the floral kingdom. With the varied climate and wonderful soil, the only problem is water, it being unusual for any rain to fall between May and October. Consequently summer crops are dependent entirely upon irrigation, the winter rains taking care of the cereal crops.

This at first sight would seem hopelessly discouraging, but the Californian takes the lack of water as philosophically as the Hollander, the lack of land. The former irrigates to get more water and the latter dykes to get more land. Southern California is moderately warm the year round, the temperature is said not to vary more than 15 degrees during the entire year. The mornings are frequently foggy and cool.

Middle California is usually uncomfortably hot during the summer season; while Northern California is said to be balmy throughout the year in the interior valleys, chilly in the mountains, and decidedly windy near the coast.

Dr. J. L. Tyler in his office at Pomona, Calif.

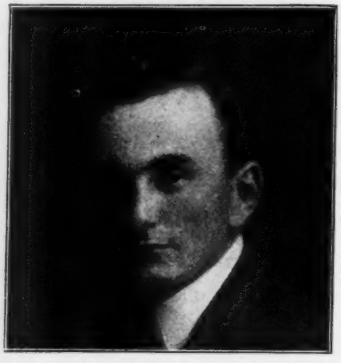


Dr. C. M. Haring, California University at Berkeley, one of the men who is bringing the profession to the front in California.

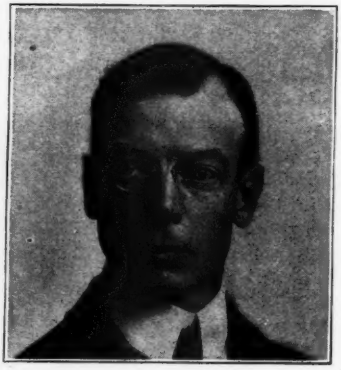
On a motor trip from Los Angeles to San Francisco, in which our good friends Drs. Longley and McKenna alternated in piloting Dr. McKenna's Cadillac Eight at 60 miles an hour, we stopped on the coast route to get lunch at a little roadhouse and observed a sign doing vigilant service, which read, "The wind never blew like this before." The coast winds are so constant that all trees grow in a bent position.

Let us stop a minute here and reminisce and tell you something of the generous hospitality of the California veterinarians.

Dr. J. A. Woodside was most courteous and thoughtful in telling us of the points of interest in Southern California; and his client, Mr. Walter Dupee of Santee, a typical southern gentleman, gave us a delightful ride from Santee to San Diego in his high-powered Packard. It was the first time we had ever seen the orange and walnut groves at close range and had the intricate methods of their cultivation explained to us. The extensive dry farming ever and ever stirring the soil to utilize the scarce and precious moisture and the irrigating system with the thousands and thousands of feet of pipe laid on, or under, the ground all over a farm, the millions of gallons of water used daily on a small area, all of which is necessary to insure a crop, show the resourcefulness of man. The smudge pots scattered throughout the orchards at once attracted our attention, and we were told that when the weather threatens to turn a little cold, the night watchman of a community keeps his eye on the mercury and if it shows any tendency to go too near to freezing, he spreads the alarm to all the growers.



Dr. Hart, another of the busy workers at the university at Berkeley.



Dr. R. A. Archibald, who has been confined to his bed for a year at his home in Oakland, Calif.

All are soon up, these myriads of smudge pots are lit and burned until the danger of freezing has passed. There is something about this midnight watchfulness and the lighted fires with all astir that brings to one's mind "the midnight ride of Paul Revere."

When we reached Los Angeles we found the veterinarians had called a meeting, and a dinner was given in our honor. It was one of the pleasantest functions we have ever attended. Men had come long distances, and all were genuinely friendly, and we dined and visited until long after midnight.

Arrangements had been made for a clinic to be held the following day, and

after spending a delightful night with our friend, Dr. John Tyler of Pomona, we met the following morning at the commodious hospital of one of Los Angeles' leading veterinary firms, where several cows were presented for demonstration of sterility work. After the clinic, an automobile party, as planned, began a tour of the city and the nearby sights. One of the places visited was Universal City about five miles out of Los Angeles, where it is said that a greater number of moving picture films are produced than in any other one place in the world. We here saw the ruins of Belgium and France; the lassoing of a man and elephant by a chimpanzee in the desert wilderness, all within a radius of a block or two. After all, isn't it strange how easy it is to amuse human beings, irrespective of how little truth or merit the amusement may have?

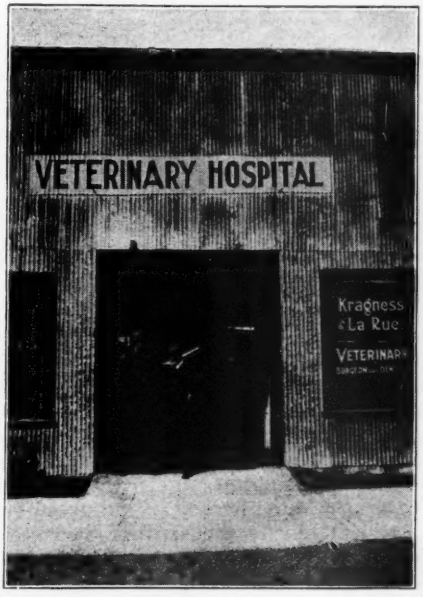
The following day being Sunday we started with our good friends Drs. O. J. Longley and J. F. McKenna in the latter's car for Fresno; first stopping at Pasadena to see the wonderfully complete and neat little home and hospital of Dr. T. H. Agnew. It is the nearest to an ideal place for a pet dog we have ever seen, as it is located sufficiently suburban that the dogs may have real out-of-door exercise and still it is not too far away to attract those who wish to be reasonably near their sick or absent pets.

Our ride up through the valleys from here to Fresno gave us a wonderful opportunity to get an idea of the topography of the country. The miles and miles of straight, level, cement roads, sometimes running in stretches for 25 miles without a bend or rise and ofttimes for miles without a village or home to break the line was indeed a marked contrast to our thickly populated rolling country in the east, where the westerner thinks of us as being all jumbled in a heap with scarcely breathing space.

We spent a day at Fresno enjoying the hospitality of that capable and busy practitioner, McKenna, where he had planned another meeting of veterinarians for the evening, and so we spent another delightful evening with fellows who are "the salt of the earth." The next morning we regretfully left Fresno but fortunately from there on we were taken in hand by one of the princes of the veterinary profession, the same Longley who had been with us all the way.

We have all seen dead fellows that have but few or no enemies, but I have never seen a real live fellow that had more friends and fewer enemies than O. J. Longley. When he cannot do enough for his friends himself, or when he thinks he cannot, he solicits the aid of others, and so after we left McKenna's he took us to us see our colleague, Dr. Kron of San Francisco. Kron knows the city and knows how to entertain and when time necessitated us leaving him we crossed the Bay and called on one of our unfortunate "Standard Bearers," Dr. R. A. Archibald, who has been confined to his bed for nearly a year. We found him with the same undaunted courage that has characterized his life, fighting unkind Nature with a determination to again get well, and our heart goes out to him with a thousand wishes and a hope that we shall soon see him with us as of old.

We then journeyed over to the beautiful campus of the California University at Berkley and were delightfully received by those boys who are making the worth of their profession known in



Hospital of Kragness & La Rue at Redding, Calif.

Desert scene in southern California.

their adopted state: Haring, Hart, Traum, and others.

Another meeting had been called here and we enjoyed a most delightful day in holding a clinic and discussing veterinary topics, particularly the problem of sterility.

Having entered California by the lower route, we left by the Southern Pacific. The loading of the long train, the Overland Limited, onto an immense ferry to cross the Bay between Port Costa and Benecia, was a most interesting sight. The ride through the fertile Sacramento Valley is particularly interesting to a lover of live stock, and we saw more dairy herds in this valley than in any other part of the state we visited. At Roseville we changed engines, two sturdy ones replacing the single one, and then our climb over the Sierra Nevadas began. A trail so winding that it took much time to reach the summit, an elevation of 9,000 feet. We found here beautiful green valleys, watered by the snow-capped peaks less than a quarter of a mile distant. The forty miles of snow sheds were at first interesting, but their obstruction of the view and the confining of the engine's smoke soon made them objectionable. It is particularly fortunate that oil is used as a fuel in the engines since gas and cinders from coal would doubtless make the arrangement unbearable.

About 7 p. m. we reached the city of Reno, where perhaps more shackled souls have shed their fetters, or thought they had, than in any other spot in America. Things seemed human-like, however, in this city and we passed on without any special happenings.

The following morning found us in Utah, interest centering on the Great Salt Desert, presenting the appearance of an eastern boggy, lowland meadow, covered with a light fall of snow. The desert reaches to the great Salt Lake, which is crossed by a bridge about thirty-five miles long, Ogden being located on its eastern border. At Ogden we changed to the Denver & Rio Grande R. R. and continued to Salt Lake City, which is located thirty-seven miles to the south, being hemmed in by mountains near the highest peak of the western Rockies, known as the Wartach. Traveling through Utah many suffered from the heat, but to some of us "lightweights" the heart was not unbearable.

By evening we had reached Soldier's Summit, an altitude of 7,440 feet. The intense heat had gradually given way to moderate coolness, but unfortunately about the time the weather tempered and all were to bed, the tender of the engine left the track and frightened those in the first sleepers so that bedlam reigned. As the train stood on a high embankment most of the passengers refused to return to their sleepers until the tender was back on the track and the train had moved to an apparently safer lever. After a survey of the damage done, the twisted rails and displaced ties, with the canyons hundreds of feet below, it was generally agreed that it was a "fortunate accident." The accident delayed us about five hours; some roamed about the little hamlet called Woodside nearby; others took advantage of the absence of "rough riding" and had a fine night's sleep.

The monotony of the mountainous, burnt hills and deserts, coupled with the slow tortuous progress became rather trying on the following hot day, but toward

evening cheerfulness prevailed as the weather cooled.

The next day we passed the Continental Divide, where one may drop his mail at the highest post office in America, if not in the world, an altitude of 10,420 ft. Here also is the parting of the ways. The Rio Grande flows west toward the Pacific and on the other side the Arkansas takes an opposite course.

Further on we passed through the Royal Gorge, and some were imprudent (?) enough to brave the sun's rays without colored glasses, notwithstanding that the vender of glasses had on several occasions given grave warning that if any one attempted to view the beauties of the Gorge without these glasses, he would surely suffer the fate of Milton. Fortunately, however, all emerged with fully as acute and a much wider vision of Nature than when they entered.

As we pulled into Colorado Springs it was still light enough to get a good view of Pike's Peak. We reached Denver at midnight, three hours late, and so missed our connection over the Burlington. There being no train east until the afternoon of the next day we camped for the night at Denver and saw as much of the city as possible. One of the places the guides are sure to acquaint the traveler with and which seems of almost universal interest, is the spot which that unusual character, William Cody ("Buffalo Bill"), chose for his final resting place, on the pinnacle of Mt. Lookout. A climb to this spot is quite apt to bring to the mind of the Bible student, the mysterious burial of Moses in the land of Moab.

As we neared the east we felt grateful that the various mishaps of the trip were wanting in seriousness, and it was indeed good as we reached Nebraska to again see rain, and to find trees, grass and grain growing without a human hand encouraging them with a hose or a sprinkling pot.

Comparing Swine Plague to Hog Cholera*

By ROBERT JAY, Nashville, Tenn.
Tennessee Inspector in Charge, U. S. B. A. I.

WHILE swine plague has been recognized as a separate disease since 1886, its epizootic appearance last year with its apex in the fall has brought its relative importance to hog cholera to our serious consideration. This swine plague propaganda has been fraught with much confusion to the veterinarian, but I am quite sure that our experiences during the past year have demonstrated the possibility of its diagnosis. Our attention just now is directed to its correlating or subsequent appearance to hog cholera to account for the small per cent of failures to immunize against that disease. Are we justified in regarding a disease as a mixed infection when we assume that these subsequent invading organisms would be innocuous, had not the filtrable virus first rendered the tissues pervious? Again, the treatment of the herd is not altered either from the standpoint of the sanitary official or of the practicing veterinarian, by this knowledge. It is the filtrable virus which must receive our attention.

Since the advent of anti-hog cholera serum, infectious diseases of hogs have been treated through its use; and, taking our knowledge of infectious swine diseases and the promiscuous use of the double treatment into consideration, with remarkable success. When disease has appeared in a treated herd we have generally eliminated hog cholera from possibilities in our diagnosis, but we now know that the treatment of a herd is not positive evidence of immunity and that we are not justified in excluding hog cholera on such assumption.

In considering swine plague as a disease, per se, our first endeavor should be to eliminate the virus of hog cholera. After this is accomplished much of the confusion that exists regarding mixed infection will go with it. Hog cholera was excluded in our diagnosis in doubtful outbreaks by injecting blood taken from sick hogs in the acute stage of the disease. The blood did not transmit any disease apparently, while the pigs proved susceptible to hog cholera virus later on.

In offering a comparison between the diagnostic features of swine plague and hog

*Paper read at the 23rd annual meeting of the U. S. Live Stock Sanitary Assn., Chicago, Dec., 1919.

cholera as presented in the field, our experimental data to confirm our diagnosis of swine plague is very meager, while the findings in the laboratory were verified by isolation of the bipolar organism from the material submitted, a definite diagnosis of swine plague was withheld for the reason that the organism is so frequently found associated with hog cholera that its presence does not eliminate the filtrable virus and also that it may be quite accidental. From the fact that we had a disease showing a definite incubative period with a febrile stage which was characteristic together with consistent physical indications of pulmonary infection and postmortem lesions which are common to all septicemias, we concluded we were dealing with swine plague.

The transmissibility of hemorrhagic septicemia to other animals on the farm has been observed; as for instance, on one farm the hogs were first infected, next the chickens, and third, the cattle. The disease was diagnosed in all three species.

Points of Difference

The following points of difference have come to our notice in the field. History: No knowledge of exposure to hog cholera with no cases in the neighborhood and no traffic in cholera hogs. This history is usually outstanding in herds with swine plague, and should give us our first hint of exclusion of cholera. In cholera outbreaks we can usually get a history of the existence of the disease in the neighborhood or of other possible sources of infection. In this connection will state that we are not aware of an instance where swine plague was transmitted to hogs on adjoining farms showing the lack of value of quarantine restrictions.

To conclude from its sporadic occurrence it would seem that infection introduced from outside sources is not necessary, but that the disease may be autogenous by the changing of the bipolar organism from the benign to a pathogenic type. As authorities inform us that the bipolar organism is found in the soil, food and water, and also in the air passages and intestinal tract in normal hogs, it is quite evident that the predisposing causes play a most important part in determining the attack.

Our observations show that swine plague occurs in hogs that have recently been changed from pastures or range and narrow rations to full feed, especially a diet rich in protein, as in hogs having access to a field of corn and soy beans or cow peas; or turned into a field of alfalfa or rape; or clover with full feed or corn, or turned into a dry lot with access to self-feeders with corn, shorts and tankage; or after a beef or horse carcass has been dragged into the hog lot. Swine plague frequently shows up in hogs at fairs, when the hogs have been fed for show condition and their movements limited by placing them in small pens, especially when this flushing is followed by chilly autumn nights and cold winter weather. We have never observed this disease in hogs on range except during a heavy mist in the fall, when a hog can get his fill without much exercise.

Pathogenesis

A theory is offered to account for the pathogenesis of the disease: A hypernitrogenous condition due to excessive feeding for fattening or for show condition, restricting movements by taking off range and confining in small enclosure when nitrogenous feeds are not used for muscular repair. This flushing, together with the chilled cutaneous surface which drives the blood to the lungs and digestive tract where these bipolar organisms are found in normal hogs; this nitrogenous media offering a favorable pabulum for the growth of these organisms, changing them from the benign to the pathogenic type which invade tissues and reach the blood stream. May not the causal organism of swine plague possess the properties ascribed to Bacillus suipestifer by Prettner and Emmerich—that of producing nitrous acid in material containing nitrates which may form a nitrite poisoning of the body and the formation of methemoglobin in the blood, thereby preventing proper oxidation of the tissues. This would account for the cyanosis which is so marked in acute attacks of swine plague and which is not in proportion to the impervious lung tissue.

With hog cholera all the requirements of infection are susceptible hogs on any feed or surroundings and the virus of hog cholera which must originate outside of the body.

Onset: Swine plague is characterized by sudden onset—hogs well one day without a history of a single loss, all on feed, the disease showing the following day with distressing symptoms and rapid spread in the herd. In hog cholera we usually have a report of one hog being off, followed by others after the usual period of incubation. The general appearance of a herd in swine plague is characteristic—the sick hogs are full, hair is glossy, showing a high state of thrift just previous to the attack; in contrast to cholera hogs showing gaunt, with hair rough and a general unthrifty appearance.

The temperature readings of swine plague in typical outbreaks have been diagnostic; the high temperatures showing on the first day of the attack, ranging from 104 to 108 degrees, usually dropping to between 103 and 104 degrees the third day when, if the hog survives, it is usually back on feed. In a few pigs showing involvement of synovial membrane by swelling of joints, the rise in temperature has been intermittent. The temperatures in hog cholera, on the other hand, are maintained for days or weeks.

Symptoms: The disease is usually announced by spasmodic breathing-thumps. In the pulmonic form of swine plague, which is observed to be by far the most prevalent form, the hog will sit up on its haunches or lie on its breast; when urged to move will have a violent fit of coughing, some will vomit a thick stringy mucous the first day, markedly tinged with bile. Conjunctiva is red, swollen and weeping; discharge of mucous from nose often streaked with blood. In contrast, the cholera hog lies around with nose poked in bedding or stands apart with tail and ears drooping, the picture of despair. Thumps is rarely seen as an initial symptom and when seen appears at a later stage of the disease; cough when present, is usually weak. The appetite in an acute attack of swine plague is wanting during the febrile stage, but usually returns with the drop in temperature in two or three days. In cholera, the appetite is mincing for a day or two before the loss is complete. In swine plague, hogs may show a diarrhea which does not persist; while in cholera, diarrhea or constipation, or alternating, usually persists throughout the course of disease. While chilling is marked in both diseases, in swine plague, it is more often observed. The bristles are sometimes seen to stand erect, and we have observed in several hogs this peculiarity to persist after a year had elapsed.

The age of susceptibility should also be taken into consideration. Thrifty growing shoats and young hogs are most susceptible; thin, poorly fed and unthrifty hogs seem to be singularly free from the disease, while hog cholera attacks all ages and conditions, pigs seeming to be most susceptible. In swine plague the gait is stilty; in hog cholera, there is a staggering gait which denotes such prostration and is so characteristic.

The morbid changes of swine plague are those common to all septicemias: diffuse redness of the thin parts of the skin, irregular hemorrhagic splotches on the larynx, heart, and especially on the endocardium, the kidneys, however, showing most constantly hyperemia, intense in places, often spoken of as a blush. This blush seems to be fairly constant. On the mucosa of the bladder is sometimes seen raised ecchymotic spots but more often congested. The lymph-glands more often show an alveolar hemorrhagic condition rather than entire envolvement of the gland, and a serofibrinous exudate in the perineal connective tissues and also in the interlobular lymph-spaces in the lungs, often separating the lobules distinctly, the lungs showing red hepatized areas generally lobular in extent. The tendency to gelatinous exudate on serous surfaces seems to be a distinguishing feature. The cases that linger for some days may show an adhesive fibrinous deposit on the pleuræ, the pleural sack often containing a bloody exudate, the substance of the lungs showing numerous suppurating foci. In hog cholera, during the acute stage, the generally enlarged and extensively hemorrhagic lymp-glands are marked especially the submaxillary, which fades as the disease progresses.

The well-marked circumscribed petechiæ on the kidneys, intestinal mucosa, peritoneum, bladder and lungs, together with the characteristic button ulcers which appear later on, to us, mark the postmortem differentiating characteristics.

(*Continued on Page* 76)

Your Personal Interest in Army Veterinary Legislation

IT seems that since most of us first entered the veterinary profession we have been appealed to at not infrequent intervals to support legislation for the improvement of the veterinary service and the conditions under which veterinarians must serve in the army. Hoskins stated at New Orleans that he had been in this fight to improve veterinary conditions in the army for more than twenty years, and the writer gathered from other remarks he made on the same occasion that he is not overly pleased with the results of this effort.

Formerly most veterinarians took only an academic interest in army veterinary legislation. They were appealed to to support wholesome veterinary legislation for the benefit of the few veterinarians then in the army and for the prestige and reputation of the profession as a whole. Much was accomplished, but it represented the achievement of a few hundred individuals. Regrettably, the profession as a whole was lethargic in the matter, and such results as were accomplished were only a beginning and left much to be desired, as more than 2,500 veterinarians now know from personal experience in the late war.

The Great War has taught all veterinarians, both those who saw military service and those who did not, that army veterinary legislation has a vital interest for them individually. The suddenness with which the call for veterinarians came and the large number required (the matured plans of the War Department called for 3,500 veterinary officers on June 1, 1919, and only the signing of the armistice before that time prevented their being in the army on that date) has shown that there are few veterinarians who may be certain that they will not be in the army before other legislation than that now pending is enacted, and so be directly governed by the bills now pending.

The proposed bills are unsatisfactory for the reasons given in another article in this issue. Such legislation can result only in either a half performed, inefficient veterinary service in the army in peace times, or the transference of a large part of the work properly veterinary to other branches of the army and an almost submergence of the veterinary service. In either case, when another war comes, thousands of veterinarians will find themselves in the army under conditions in no way improved upon those of two years ago. After war begins, preparation and organization that should have been made in peace times but were not, are impossible of accomplishment, with what dire consequences those veterinarians who saw service in France had ample opportunity to observe.

Now is the time to get the kind of a veterinary service you want in the next war, when you may be a part of it. Unfortunately there is no veterinary organization prepared to handle this matter in a national manner. We must exert our efforts as individuals, and there is every reason to expect success if there be no shirking. Our representatives in congress must be told what we want. No sane representative will be disinclined to hear his veterinary constituents on a purely veterinary matter.

There is work to do now while the Senate and House bills (both unsatisfactory) are in their respective military committees. There will be other work to do later on when the bills are before the Senate and House, and perhaps while they are in conference—for months altogether. A spurt now and not followed up later will be inadequate. Failure to do anything now will probably render ineffectual the best of efforts later on. It's a work that cannot be delegated. Each must do his share. In another article, what is believed to be most necessary at this time is asked of each veterinarian.

VETERINARY PROVISIONS OF THE SENATE ARMY BILL

Comparisons are said to be odious. Granted, but at the same time it can be stated that they are often very instructive, and viewed in such a light are quite essential in order that a subject may be viewed in its proper perspective.

Hence the following comparisons drawn between the provisions for the various professional services of the army as provided in the Senate Military Committee Bill for the reorganization of the army.

(a) Basis of allowances taken as an army of 263,000 enlisted men exclusive of Medical Corps and Philippine Scouts: 18,000 officers, 90,000 animals.

1. Medical Corps: Officers. Enlisted strength. Original grade—1st lieutenant: Promotion: Captain after 3 years; Major after 14 years; Lt. Col. after 20 years; Colonel after 26 years.

2. Dental Corps: Officers: 263. No enlisted strength. (Original grade and promotion same as Medical Corps.)

3. Corps of Chaplains: Officers: 220. No enlisted strength. (Original grade and promotion same as Medical Corps.)

4. Medical Administrative Corps: (present Sanitary Corps). Officers: 132 (1 to each 2,000). No enlisted strength.

Original grade, 2nd Lieutenant; Promotion: Captain after 10 years; Major after 20 years; Lt. Col. none; Colonel none.

5. Veterinary Corps: Officers: 150. Enlisted strength, 1,500.

Original grade, 2nd Lieutenant. Promotion: Captain after 10 years; Major after 20 years; Lt. Col. after 25 years; Colonel none.

(b) Duties: 1. Medical Corps: (1) Sanitary (health of troops; (2) Professional; (3) Administrative.

2. Dental Corps: (1) Professional *only*.

3. Corps of Chaplains: (1) Instructive.

4. Veterinary Corps: (1) Sanitary; (2) Professional; (3) Administrative; (4) Instructive.

The duties of the veterinary officers are many and varied; viz:

As sanitarians, they are responsible for the animal health which is to a certain degree linked up with the well being of the troops.

As sanitarians, they are responsible for the inspection of all meats and meat food products used in the army. At the present date, January 10, 1920, no fewer than forty-six veterinary officers are engaged in this very important and necessary work.

As professional men, they are required to care for sick and injured animals. This requires the operation of hospitals. Under this heading may be considered the laboratory service which is an absolute requirement for a successful corps. At present, six veterinary officers are engaged in this work and the service needs expanding for proper scientific investigation.

For administrative purposes, the director of the corps will be responsible for 150 officers and 1,500 enlisted men.

Veterinary officers are detailed for instruction purposes to the Cavalry School at Fort Riley, Kans., to horseshoeing schools, etc.

Summary

1. Comparing the various lines of activity in the Veterinary Corps with other corps and noting the total number of officers allotted the Veterinary Corps and the Corps of Chaplains, also the number of veterinary officers engaged in meat inspection work alone, it will at once become apparent that the number of veterinary officers allotted the Veterinary Corps is hopelessly inadequate.

2. Just as it is found to be absolutely necessary in all other branches of the service, so is it essential that schools be established for the training of veterinary officers if an efficient and up-to-date service is to be maintained. This is not provided for.

3. A marked distinction is noted in the original grades in the case of the other professional branches. The Veterinary Corps is placed on the same basis as the Medical Administrative Corps, which is non-professional, except as to the grade of Lieut. Colonel. The discrimination is not understood.

4. In any other branch of the service, the administrative responsibility for 1,500 men would alone carry the grade of Colonel. This grade is not allotted for the many duties and professional responsibilities involved in connection with the Veterinary Corps.

5. Provision is made for commissioning Medical Administrative Corps officers in the grade of First Lieutenant, Captain and Major to fill existing vacancies, while all veterinary officers who have not served for five years must come in with the grade of Second Lieutenant.

6. The provisions of the bill will not permit the Veterinary Corps to function in an efficient manner. Many important lines of activity will necessarily have to be totally neglected.

WHAT EVERY VETERINARIAN SHOULD DO FOR ARMY VETERINARY LEGISLATION NOW

THE outlook for proper army veterinary legislation is unsatisfactory. Not hopeless, because the day can yet be saved for the veterinarians, but unsatisfactory because the much that has been done already to incorporate provisions for an adequate veterinary corps in the pending army reorganization bill has apparently failed and the traditional congressional obtuseness in matters veterinary seems as great as ever, notwithstanding the illumination the war cast upon the results of refusal to provide the army with an adequate veterinary organization before it was called upon to function in war.

The Surgeon General of the army, of whose department the veterinary corps is a part, presented to the subcommittees of the Senate and House Military committees a plan for the veterinary corps that the veterinarians in the army consider adequate, well thought out, and designed to make for the army an efficient veterinary service. So far as the writer is aware, and some investigation has been made, the army veterinarians are unanimous in the support of the Surgeon General's recommendation for the veterinary corps. In addition to having the support of the Surgeon General and the endorsement of the army veterinarians, its advantages, the absolute necessity for its provisions in general were urged upon each member of both subcommittees individually by representatives of the legislative committee of the A. V. M. A., but to no avail.

The Senate subcommittee brought out a bill providing for only 150 veterinary officers and 1,500 enlisted personnel, fewer than half the irreducible minimum number of either officers or men necessary to proper functioning of the corps. Instead of providing for officers in grades from first lieutenant to colonel or above, and for early promotion, as in every other professional service in the army, the bill provides that all with less than five years' experience in the army shall begin as second lieutenants, and the highest rank provided is lieutenant-colonel. A virtual official classification of the veterinary service as a non-professional—a slur upon every veterinarian whether in the army or out of it.

The present House military bill is even worse than the Senate bill, providing for only 140 veterinary officers and no enlisted men, and in grades from second lieutenant to major.

The outstanding faults of the proposed bill so far as they relate to the veterinary corps are:

1. Failure to provide for a sufficient number of officers or men to perform the work of the corps.
2. The rank allowed is inadequate to give the authority necessary for performing the varied duties that fall to the veterinary corps.
3. The beginning at the grade of second lieutenant and the slow promotion will make the service unattractive in peace times to the type of veterinarians the army should have at all times and must have in war time.
4. A distinct injustice is done the veterinary profession in not giving the veterinary corps the same recognition that is given the medical corps, the dental corps and other professional men in the army.

The preceding article illustrates this iniquity. It is inconceivable that such a lack of consideration will be allowed to pass unchallenged by the veterinary profession of America.

Hearings are now being held by the full committees. The members of these committees can be influenced only by veterinarians living in their respective states and districts. Such veterinarians not only have an immediate duty to perform for themselves, the profession, and the army, but a distinct privilege, in that the opportunity is theirs to strike the first blow in an effort to force from Congress merited recognition of their profession.

Following this article we give the members of the Senate and House military committees. It is essential that all veterinarians living in the states represented on the Senate committee write their senator on the committee, protesting against the provisions of the Senate bill applying to the veterinary corps, and urging that the Surgeon General's recommendation as to the veterinary corps be substituted for the committee bill provisions.

It should also be mentioned to the senators that the provisions of the House

military bill are equally unsatisfactory, in so far as they apply to the veterinary corps.

It is equally essential that all veterinarians living in the districts represented by the members of the House committee write their Representative on the committee to the same general effect.

Th following should be implied in every letter:

1. An adequate total number of veterinary officers—not less than 340.
2. Rank in all grades from first lieutenant to colonel.
3. Elimination of the grade of second lieutenant.
4. An adequate enlisted personnel—not less than 3,000. This much letter writing is imperative now and should not, must not, be neglected.

If all other veterinarians, those not constituents of the members of either committee, would write their senators and representatives at this time to the same general effect, it might have some influence on the committees indirectly, and it would certainly make the approach easier later when all must probably write their senators and representatives numerous times while the army reorganization bill is under consideration in the Senate and House. Letters written to members of Congress not on the military committees now would have the advantage of reaching these men when their minds are open, before they have decided either way, and too, when other letters come later on, it would show that the writers had had the matter in mind for some time and that the letters were not the result of sudden impulse.

Requests from home by members of Congress is the only likely way to procure desirable army veterinary legislation at this time. There is every reason to believe that it will do it, if they only "hear from home" often and forcibly enough.

[Since the foregoing was put in type the Senate committee bill has been amended and is now satisfactory. All effort should be directed to inducing the members of the House Military committee to adopt the surgeon general's recommendation with respect to the Veterinary Corps.]

The personnel of the military committees is:

HOUSE MILITARY COMMITTEE

*Julius Kahn, of California.
*Daniel R. Anthony, Jr., of Kansas.
*John C. McKenzie, of Illinois.
*Frank L. Greene, of Vermont.
John M. Morin, of Pennsylvania.
Thomas S. Crago, of Pennsylvania.
Harry E. Hull, of Iowa.
Rollin B. Sanford, of New York.
W. Frank James, of Michigan.
Charles C. Kearns, of Ohio.
Alvan T. Fuller, of Massachusetts.
Fiorello H. LaGuardia, of New York.
John F. Miller, of Washington.
J. Kuhio Kalanianaole, of Hawaii.
*S. Hubert Dent, Jr., of Alabama.
*William J. Fields, of Kentucky.
Percy E. Quin, of Mississippi.
*Charles Hope Caldwell, of New York.
James W. Wise, of Georgia.
Richard Olney, of Massachusetts.
Thomas W. Harrison, of Virginia.
Hubert F. Fisher, of Tennessee.

*Indicates sub-committee that is preparing draft of proposed bill.

Irvine L. Lenroot, of Wisconsin.
Selden P. Spencer, of Missouri.
Arthur Capper, of Kansas.
*George E. Chamberlain, of Oregon.
Gilbert M. Hitchcock, of Nebraska.
Duncan U. Fletcher, of Florida.
Henry L. Myers, of Montana.
*Charles S. Thomas, of Colorado.
Morris Sheppard, of Texas.
J. C. W. Beckham, of Kentucky.
Wm. F. Kirby, of Arkansas.
Kenneth McKellar, of Tennessee.

OFFICERS VETERINARY CORPS, UNITED STATES ARMY

Temporary rank, authorized by Congress in bill providing 18,000 officers until June 30, 1920:

	On Duty December 11, 1919	On Duty January 11, 1920
Colonels	0	0
Lieutenant Colonels	4	4
Majors	37	35
Captains	72	73
First Lieutenants	156	148
Second Lieutenants	72	76
Totals	341	336

OFFICERS VETERINARY CORPS, REGULAR ARMY

Permanent Rank—Act June 3, 1916

	On Duty January 11, 1920
Majors	7
Captains	17
First Lieutenants	21
Second Lieutenants	47
Total	92

The following orders of transfer and reassignment have been issued for veterinary officers:

1. Captain Hume F. Spencer, V. C., from Camp Funston, Kansas, to Camp Upton, New York, as Camp Veterinarian.
2. Captain H. H. Howe, V. C., from Remount Depot, Camp Gordon, Ga., to Remount Depot, Camp Grant, Ill., for duty as The Veterinarian.
3. Captain F. C. Sager, V. C., from Camp Grant, Remount Depot, to Chicago, Illinois, for instruction in meat inspection.
4. Captain C. C. Bourland, V. C., from Ft. Bliss, Texas, to Department Laboratory, Philadelphia, Pa., for course of instruction.
5. Captain J. L. Ruble, V. C., from Chicago, Ill., to Ft. Brown, Brownsville, Texas, for duty as Post Veterinarian and Brownsville District, Brownsville, Texas, for duty as District Veterinarian.
6. Captain E. P. O'Connell, V. C., from Chicago, Ill., to Ft. Sam Houston, Texas, for duty as Post Veterinarian.
7. Major F. C. Hershberger, U. S. A., from Camp Upton, N. Y., to Marfa, Texas., as District Veterinarian, Big Bend District and Camp Veterinarian, Marfa, Texas.
8. Major W. B. Cook, U. S. A., from Camp Travis, Texas, to Dougles, Arizona, for duty as District Veterinarian and Camp Veterinarian, Camp Harry J. Jones, Douglas, Ariz.
9. Major G. H. Koon, U. S. A., from Chicago, Ill., to Washington, D. C., for duty in the Surgeon General's office.

Department of Live Stock Poisoning

By L. H. PAMMEL, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

Readers are urged to take advantage of the opportunity offered by Dr. Pammel, for the identification of specimens of supposedly poisonous plants. Two good-sized specimens, carefully packed, should be sent to him direct, with such history as may be available. Simply mention that you are a reader of the AMERICAN JOURNAL OF VETERINARY MEDICINE and no charge will be made for this service.

Is the Dogwood Poisonous?

A little while ago I received from Mr. A. W. Hammons a specimen of one of the common dogwoods (*Cornus asperifolia*), asking whether the same might be poisonous. Since the letter contains no description or other details, I asked for more information which Mr. Hammons sent, as follows:

"Three or four men secured sheep from same shipment, and no loss was recorded, except in this one case. They were in the pasture at 3:00 o'clock in the afternoon, and twelve were dead the next morning. They were taken out the next day and eleven more died shortly afterwards. No more were lost, except what might be termed the ordinary loss after they were removed. The sheep were not bloated.

"There are some weeds and brush in this pasture, and large quantities of the dogwood. There was a question of it being hemorrhagic septicemia. If this had been the case it would seem that the other lots of sheep would have been infected also, as they all came from the same shipment."

I do not think the dogwood could have produced the symptoms described in the above letter. The dogwood has been regarded as suspicious, by some people, but the symptoms of dogwood poisoning, so far as I know, have never been described. Mr. Hammons did not send any other plants. In the pasture he mentions a composite weed from which the plant known as golden glow was derived, as common in the low swales, also a weed on higher ground; the whorled milkweed is common. I would, therefore suggest that if it was a case of poisoning, these weeds might have caused it rather than the dogwood.

Some Cases of Buttercup Poisoning

Buttercups of the family Ranunculaceae have long been regarded as injurious, causing blistering. Many other plants of this family are acrid and powerfully toxic in some cases, like larkspur and aconite. Dr. W. S. Mulvey in a recent number of the *Veterinary Journal* (London) calls attention to the fatal poisoning from the acrid buttercup (*Ranunculus acris*), a not uncommon plant in low grounds from the Atlantic to the northern Mississippi valley states. The

variety referred to is *var Borocanus* and does not occur in the United States so far as I know. Dr. Mulvey states that he was instructed to investigate a suspected case of anthrax. On arriving at Ingatestone he found two nine-months' old heifers dead. A few days later two other animals were off feed, very depressed and quite blind in both eyes from amaurosis. One of these died. Postmortem of the animals revealed intense inflammation of the stomach and intestines. He observed one case, a cow, during the progress of the poisoning and this is described by him as follows:

"The cow was found in the meadow in great pain about 10 a. m. and was immediately removed to a loose box. I saw her about 12 noon. She continued to show signs of abdominal pain until 11 p. m. when she died.

"For the last three hours she could not stand. There was complete amaurosis.

"Immediately after death the carcass became enormously distended.

"The postmortem result was exactly like the other three."

He states that the French have reported several deaths from eating the flowers of the plant. The chemist, Mr. McKenzie Taylor, found a trace of aconitine in the brain of the animals, but no alkaloid could be found in the blood. Mr. Mulvaney states that a considerable quantity of these buttercups had been eaten by the animals and that no other poisonous plants were found in the pasture.

Another case of poisoning occurred at Britton's Hill farm. This cow also died. In this case the chemist found aconitine in the stomach. An analysis was also made of the plant itself in which the alkaloid occurred. The author adds the following botanical note:

"Anne Pratt, in 'Flowering Plants of Great Britain,' remarks: 'This species, which blooms from April to September, is, as its name imparts, very acrid. Cattle eat it only when hungry; and Curtis says that if eaten by them in any quantity it will blister their mouths. He adds that he blistered his own hand by gathering it.

"*Acris* is one of the three common field buttercups, but the lack of runners easily distinguishes it from creeping crowfoot (*R. repens*), and the non-bulbous root from the bulbous crowfoot (*R. bulbosus*), which is very common in some meadows."

Pellagra

A committee of the military authorities at Alexandria, Egypt, has published its findings in connection with Turkish prisoners of war and pellagra.[1] The inquiry was begun Oct. 7, and the report is dated Dec. 31, 1918. The conclusions of the committee of inquiry may be summed up as follows: "The disease was true pellagra and the patients were generally pellagrous before capture. The great majority of the cases that were systematically questioned stated they had similar symptoms before capture, while among those examined shortly after they were made prisoners many were found suffering from the fully developed disease. In one batch of 1,300 prisoners seen on their arrival direct from the front, 18 per cent had the malady fully developed.

"Any increase in the disease has not been due to other general conditions than those unavoidable for prisoners in monotonous confinement in an alien, hot, and arid country, with no stimulus to check the inevitable decline in their physiological resistance. Pellagra as a primary or immediate cause of death played an insignificant part in the series of cases that were examined. As a contributory cause its influence was shared by other debilitating diseases, of which chronic dysentery was the worst. After thorough investigation by various experts, no evidence was found as to the etiological relationship of the disease to bacteria, protozoa, or to blood condition. With regard to food, the committee found so constant an association between the biological protein value of diet and the occurrence of pellagra that they considered that the lack of sufficient biological value of protein stands in etiological relationship to pellagra, certainly as an exciting factor, and possibly as the determining factor. The report states that the deficiency in the biological value of protein may be: first, absolute, as determined by the standard for normal persons, or secondly, relative, as determined by individualistic correlation between food as-

[1]Lancet, London, Sept. 13, 1919.

similation and energy expenditure, and thus modified by ill-health and idiosyncrasy. A large proportion of the cases showed helminthic and flagellate infections of the intestines. These cannot be regarded as causal factors, but merely contributory to digestive disturbance and malnutrition.

Beriberi

N. M. Salesby in discussing some experiments with human beriberi with autolysed yeast extract stated that polyneuritis in fowls being improved by treatment with yeast suggested a trial with human patients.[1] Brewers' yeast was separated from the adhering beer and placed in an incubator at 35° about forty-eight hours when it assumed a mush-like consistency due to autolysis. The mass was then filtered through paper, washed on the filter, and the filtrate concentrated under reduced pressure at a temperature below 60° to about one-third the original volume. About 40 cases were treated, five of which were children under two years. Adults were given 15 to 40 cc. three times a day, children two to four cc. every three hours six times a day. Larger doses did not give better results. No sign of poisoning was observed. All acute peripheral symptoms of neuritis were affected in less than three days and a weeks' treatment appeared to cure mild acute cases. Infantile beriberi symptoms were relieved with comparative rapidity. Edema yielded quickly and nutrition improved at once. No special diet was prescribed. The effect of the yeast extract used was similar to that produced by the hydrolyzed extract of rice polishings but weaker.

Scurvy

A. F. Hess and L. J. Unger[1] find in some experiments on antiscorbutics: "To a diet of oats, hay and water previously shown to produce scurvy in guinea pigs a daily per capita allowance of 5 grams of dried vegetables, consisting of mixed vegetatables or carrots, was added, in spite of which scurvy developed. A watery decoction of orange peel afforded protection, although a similar preparation that had been dried at room temperature for a few months retained only mild antiscorbutic properties. Orange juice proved to be a most effective antiscorbutic in very small amounts. When kept in the refrigerator for about three months it lost considerable of its potency. Artificial orange juice was ineffective in protecting guinea pigs against scurvy. Orange juice may be given intravenously to infants after it has been boiled and made slightly alkaline to litmus by the addition of sodium hydrate just before using. Such injections produce no untoward reaction and have a marked curative effect."

[1]Philippine J. Sci. 14: 11-2, L. W. Riggs Chemical Abstracts, 13:2698.

[1]Proc. Soc. Exp. Biol. Med. 15: 141-142. v. c. Myers Chemical Abstracts 13: 2698.

Poison Ivy Resin

It will be remembered that Dr. Pfaff of the Harvard Medical School stated that the substance from poison ivy in very minute quantity was poisonous. Dr. L. E. Warren[1] states that a few years ago he attempted to verify Dr. Pfaff's experiments, using the purified resin from the poison sumach instead of that from the poison ivy. (The two poisons are believed to be identical.) These attempts to obtain an exact quantitive limit to the amounts which would produce symptoms were discouraging, probably from want of a sufficient sensitive subject on which to make the tests. The fact was verified, however, that the substance is poisonous in extremely minute quantities—for less than 0.001 gm. The minute dosage is obtained by suitable dilution in alcohol.

Solanine Poisoning

It has often been stated that the solanine found in plants of the Solanum family and the potato is poisonous. Johannes Curt Rothe[1] records the poisoning of fourteen persons in Leipsig after eating potatoes. Rothe states that the amount of potatoes consumed each day was about one pound. He attributes the poisoning to solanine. Ordinarily potatoes contain about 0.38 g. pr. kg. In the above case of poisoning the amount was 0.38 per kg. It was determined that poisoning may result from 0.34 to 0.43 kg.

[1]Jour. Am. Med. Assn. 73: 1543.
[1]Zeitschr Hyg. 88: 1-12, Chemical Abstracts 13: 2708.

DEPARTMENT OF

CATTLE PRACTICE

Edited by JOHN FRANCIS DE VINE, D. V. S.

Cervicitis or Inflammation of the Os Uteri

THIS is a pathological condition which unfortunately has not received sufficient attention to make our knowledge as accurate as its seeming importance warrants. Until comparatively recently, most of the accepted theories as to the part cervicitis played in sterility have been quite erroneous; in fact those who posed as being authorities on animal industry practically ignored any pathological condition of the female genital organs other than atresia of the cervix, as having much to do with the problem of sterility, and this was equally true of our older textbooks on veterinary obstetrics. Where animals failed to breed, the potency of the male was questioned, or the simple (?) process of "opening" the female at time of service was recommended. This accepted teaching has been harmful; aside from having no merit in most cases it not infrequently occasioned injury and infection of the cervix by crude manipulation, and also diverted attention from the real cause. Later this practice gave way somewhat to douching the vagina with an antiacid, just before breeding. There is a possibility of this having some virtue. It is probably based on experiments that have been carried on in the human family in investigating sterility in some cases where it was found that the spermatozooa of certain males deposited in the vagina of certain females and coming in contact with the vaginal secretions perished either at once or in a short time, the resultant theory being that the secretions were too acid. However, this is not an entirely satisfactory explanation, as it was found that spermatozooa of another male when deposited in the vagina that was supposed to be excessively acid did not perish but lived several days in contact with the vaginal secretions. This theory was further complicated by the fact that the spermatozooa of the first male might remain active in contact with the vaginal secretions of another female, indicating a selective action rather than excessive acidity. This of course may explain why one animal may not conceive from any of several services of one male and conceive at once when served by another male. However, such a coincidence is not proof that the ovarian activity or the physiological condition of the cervix, uterus and tubes were not the determining factors, and that the last service occurred at just the proper time. However, douching with a slightly alkaline solution before breeding still seems to be an excusable custom, when all organs appear normal so far as can be determined.

From clinical experience, it is my opinion that cervicitis is one of the fairly common abnormal conditions of the female genitalia, particularly in bovines, accompanying and complicating in varying degrees of severity, practically every case of endometritis, metritis or retained placenta, not infrequently becoming chronic and causing sterility, or in the case of the pregnant animal, giving rise to a condition that may occasion the death of either the mother, the fetus, or both.

Notwithstanding this admission of the importance of cervicitis, I still believe it well to confine its discussion entirely to such information as seems reasonably reliable rather than to consider plausible theories, since the latter might lead to errors rather than to the enhancement of our present knowledge.

If we compare the gross anatomy of the cervix of the mare and the cow it will be apparent at once that nature for some rea-

son ordained a decided difference in the make-up of these two organs. In the mare we have a short, pliable cervix continuing anteriorally with the uterine body and posteriorly projecting into the vagina from one and a half to two and a half inches, normally, during the period when the internal genitals are in a state that might be styled dormant. During the period of estrum, not infrequently in the mare the cervix is completely obliterated, so to speak, and if one should make a manual examination at such a time the opening in the uterus would be found so dilated that the hand could be passed readily in, nothing but a fringe around the opening outlining the cervix. A somewhat similar condition also exists in some cases of chronic cervicitis in the cow. In what might be styled the ideally physiological condition of the cervix of the mare at the time of estrum, we find it soft, dilatable, and sufficiently dilated to admit one or two fingers readily through its opening. In this condition it is assumed that the glans penis of the male often grasps the external cervix and deposits the semen directly in the uterus.

As evidence of the apparent physiological advantage of a cervix of this character, experience has taught us that everything being equal, mares with such cervices conceive more readily and more regularly than those having widely dilated, constricted or indurated cervices. However, it is a debatable question whether or not this ideal cervix is not somewhat of an indicator of the physiological condition of the other internal genital organs, which in turn play a greater part in conception than the cervix itself. Let this be as it may it destroys the theories of the past, that "opening" the cervix is of any importance except in the rarest of cases, in the problem of relieving sterility, and this is as applicable to the mare as to the cow.

The vast difference in the conformation of the cervices of the mare and cow is at once apparent in the greater size and rigidity of the cervix of the cow. While the muscular walls of both are arranged in longitudinal and circular muscular fibers so as to contract or dilate at such times as nature intended, still the mare's cervix is short and so flexible that it can be readily dilated at almost any time; while in the cow the circular muscular fibers arrange themselves in rings so that a cervix may measure from three to five inches in length and the tissue be so dense and contracted that even at the time of estrum it is rarely possible to pass a sound much larger than a lead pencil through the cervix, and it is almost impossible to dilate it to any material degree without cutting or tearing, excepting at the time of estrum or parturition. The mucosa of the cervix is thrown into deep longitudinal folds, admitting of great dilation at the time of parturition, and under inflammatory conditions may arrange themselves in ridges, or in a fluted condition complicating entrance into the uterus by even a small sound or probe.

The mucosa is liberally supplied with mucous glands throughout, and it seems as though one might be justified in supposing that this hard, tight, tortuous cervix of the cow so well supplied with apparently germicidal glands, might be the one least vulnerable to infection. This is evidently not the case, or our equine females have up to the present time, so far as we know, escaped the virulent specific type of infection that works so disastrously in the cervix of the cow. When once the infection penetrates past the barrier glands and becomes seated, so to speak, the cervical tissue seems too phlegmatic to readily throw off this deep-seated involvement.

Clinically we recognize two types of cervicitis—acute and chronic. True, these types vary in severity, but where a clinician should positively subdivide is beyond my power to determine or elucidate.

In acute cervicitis, we have the cardinal symptoms of inflammation. This is plainly evident in cases that are associated with abortion or retained placenta, particularly those cases which are so acute as to cause the animal pain when the cervix is handled. It is generally known that the cervix of the cow like the human cervix has little feeling, and ordinarily can be handled and grasped with forceps and drawn back with practically no pain, but in the very acute type of cases frequently the cow will either arch her back, draw away, or strain violently with the slightest manipulation of the cervix. These cases might be styled the hemorrhoidal cases, since if the cervix is retracted to view, it will be noticed that it bleeds under pressure of the hand or forceps. Its mu-

cous folds have the appearance of freshly chopped beef, varying in color from deep red to purple. If a case of this type is seen a week or so after it might be difficult to recognize it as having been originally of this type. This may be so with or without treatment. The acute condition may have subsided so that while there is still more or less tendency to bleed from handling, the sensitiveness may have entirely disappeared and the handling cause no more pain than is usually occasioned. It is evident that some of these cases may recover spontaneously, the parts quite rapidly becoming apparently normal, but many of them not effectively treated, become chronic, with more or less induration and occasionally leading to artresia, but more often to a dilation of the cervix, varying from a condition that will admit the two fingers to a dilation that will admit the whole hand. Accompanying chronic cervicitis as a fairly constant symptom, is an accumulation in the vagina and cervix of great quantities of clear mucous, such as is observable during the early hours of an estral period, or this may be displaced by a varying quantity of either a catharrhal exudate or a mucopurulent exudate, usually with pronounced evidence of more or less uterine mucosa involvement. This involvement is not infrequently so severe as to thicken the mucous membrane sufficiently to be plainly percepitble to the finger's touch.

Where the discharge is clear and there is no plain evidence of any severe involvement of the uterine tissue except the endocervix and the animal ovulates regularly, it would be interesting to know whether the dilation of the cervix or the character of the discharge is a more important factor in failure to conceive. To determine this would probably require much evidence, since when such cases are treated successfully there apparently is a simultaneous lessening of the discharge and contraction of the cervix. Some workers are of the opinion that cervicitis is frequently seen in the virgin; if so I have rarely been able to diagnose it.

Treatment

Up to the present time I have directed my attention to trying to prevent the plainly acute cases that are associated with abortion or retained placenta from becoming chronic, by irrigating with hot salt solution daily, beginning twenty-four hours after parturition and swabbing the cervix with Lugol's solution or iodin every two or three days, continuing the treatment as long as the individual case seems to warrant.

In chronic cases that have followed abortion and been neglected, I attempt to correct the trouble where it seems feasible, by swabbing the cervix with iodin or Lugol's solution every three or four days, occasionally packing some cases with gauze or cotton soaked in Lugol's solution and irrigating the uterus where it is evidently involved with Lugol's solution from one-half to two per cent, for a few times at irregular intervals, supplemented by irrigation with hot salt solution and massaging as often as it is practical to see the patient.

As to surgical treatment, I have not attempted any of the classic operations practiced in human surgery, confining my surgical interferences entirely to removing any folds or growths or abnormal conditions that are easily accessible and from their size and arrangement appear to be interfering with a free opening of the minute canal.

It is quite probable that skilled surgery in selected cases would relieve some of the conditions that are now regarded as hopeless, but substantial advancement in cervical surgery will need to be left to those so situated that failures during the experimental period will do the least harm to their professional standing and incidentally to their income.

BARIUM CHLORID AND TARTAR EMETIC AFFECT COWS MILK

In a case of atony of the rumen, I prescribed barium chlorid and tartar emetic. Two tablets, 30 grains of each, were given in the morning and two tablets that evening. The following day the owner reported that the cow was better, but the next morning he said his children were nauseated. Whether this was due to the drugs or not, I do not know, but I now impress upon my clients that no milk is to be used until I am consulted.

M. R. P.

Dr. John McQuown of Ada, Ohio, was recently severely gored by a boar which he was treating, the tendons and muscles of his right arm being badly torn.

DEPARTMENT OF

SWINE PRACTICE

Edited by A. T. KINSLEY, M. Sc., D. V. S.

Report on Hog Cholera Control*

By A. L. HIRLEMAN, R. R. BIRCH, R. A. CRAIG, E. A. CAHILL and S. E. COSFORD

EXCEPT in a few limited areas, it appears that hog cholera is less prevalent than it has been for a number of years. This decrease in hog cholera may be due to the vigorous campaign instituted by state and federal authority, supplemented by the extensive use of either the serum alone or the serum simultaneous treatment; or, it is possible that, as pointed out by Dr. Dorset, the disease increases and decreases in more or less regular recurrent cycles. Accepting this latter hypothesis, hog cholera is due to be on the ebb tide during the year 1920.

The past ten years have permanently established the intrinsic value of anti-hog-cholera serum in the control of cholera. Material progress has been made in the manufacture, distribution, and administration of hog cholera serum without apparently diminishing the percentage of exasperating disappointments generally classified as "breaks" in hog cholera control. A small per cent of these disappointments may be due to preventable factors, such as serum of low potency, under dosing, inefficient administration and, where breaks follow weeks after the serum simultaneous administration of serum and virus, a low virulence of the virus. But, when these preventable factors are duly accounted for, we still have many bad results that tax our ingenuity and defy our skill.

Encouraged by these disappointments, biologic supply houses have experimented with and stimulated the sale of bacterins as specific treatment for so-called specific infections. As yet these remedies have not been used extensively enough, under proper observation, to either endorse or condemn them. Not a few careful, painstaking practitioners endorse both the hemorrhagic septicemia and mixed infection bacterins, while others, equally well qualified, consider them without merit. It appears quite probable to your committee that these preparations have some merit, but evidently our present knowledge of differential diagnosis in hog cholera and kindred infections is inadequate to enable veterinarians to effectively use this supplemental or specific treatment, as the case may be, in the control of infectious swine diseases.

There is unquestionably at present a greater diversity of opinion among veterinarians regarding the causes of some of the field conditions found in connection with hog cholera work than at any time since the establishment of systematic co-operative hog cholera controlled by and through state and federal agencies.

This confusion of professional opinion does not inspire public confidence. The urgent need of the hour in hog cholera control is, if possible, a clear and concise tabulation of conditions on which to make a reasonably accurate differential diagnosis between cholera, hemorrhagic septicemia, mixed infection and other possible conditions which simulate these diseases. Manifestly this is a task for qualified investigators who have unlimited opportunity in field and laboratory investigations. No other task in connection with hog

*Read at 23rd annual meeting of the U. S. Live Stock Sanitary Ass'n., Chicago, Dec., 1919.

cholera control has ever been of greater importance, the process of manufacturing hog cholera serum alone excepted.

Accurate Diagnosis Demanded

Your committee believes the time is at hand when through extensive co-operative experiments and investigation the various states and the United States Bureau of Animal Industry should definitely settle these mooted questions. Economic necessity and the welfare of the swine industry demands the establishment of reasonably accurate differential diagnosis, providing, of course, that we have two or more specific diseases to deal with, or, if the diseases that have lately gained considerable prominence and the specifics offered for their amelioration and control are, or are not, actual factors in the control of infectious swine disease, such fact should be unequivocally established.

In the course of correspondence incident to preparing this report, one member of the committee writes as follows:

"We can hardly discuss hog cholera without mentioning the mixed infectious diseases. Hog cholera breaks following simultaneous vaccination are sometimes mistaken for 'mixed infection' and treated with bacterins; sometimes outbreaks of hog cholera are diagnosed hemorrhagic septicemia and treated with bacterins. These mistakes result in serious losses, and this is one of the conditions that should be considered in connection with hog cholera control. At the beginning of the hog cholera control work a few years ago (1910-1913) very few veterinarians were qualified to take up the vaccination work and recommend practical measures of control. Veterinarians at that time had not studied the pathology of hog cholera and other infectious diseases, as they did not consider them of sufficient importance. This condition has not been satisfactorily overcome. Probably fifty per cent of the veterinarians do not take advantage of opportunities given them to secure information relative to differential diagnosis, vaccination and sanitation as they relate to hog diseases. This type of practitioner depends very largely on the information secured through reading publications sent out by commercial biological laboratories, and through discussing his problems with the representatives of these laboratories who may visit him for the purpose of selling him bacterins and other biological products."

Your committee believes that veterinarians, in addition to the literature above described, should study more extensively the newer textbooks and available scientific publications. Your committee further believes that, in many instances, veterinarians are entirely too superficial in the investigation on which they base their diagnosis.

Though admittedly many remote factors are occasionally to be considered in the control and suppression of hog cholera, it is certain that the greatest single factor responsible for the disease is the exposed, infected, or sick hog.

Your committee is firmly of the opinion that many cases of hemorrhagic septicemia, mixed infections, etc., are in reality cases of low grade hog cholera which would not occur if the affected animals received larger amounts of virus at the time of immunization.

Under open range conditions hog cholera occurs in cycles of varying frequency. After the very susceptible animals in a given community have died, the disease apparently assumes a milder form which the more resistant animals seem to combat successfully. Succeeding pig crops offering less resistance to the disease usually fall prey to a more virulent type of infection, introduced by sick hogs which have strayed or been shipped into the community and again start a new center of virulent infection. This active wave of virulent infection is again followed by a more or less complete suppression of the disease and, in turn, conditions previously referred to lead to another virulent outbreak of cholera.

In stock law districts, where each owner keeps his animals under fence instead of permitting them to run at large, many outbreaks of genuine hog cholera may be traced to the introduction of some new animal into the herd. This animal need not necessarily manifest clinical symptoms of cholera.

Undoubtedly stringent restrictive measures on all movements of hogs, supplemented by reasonable sanitary precautions, would materially aid in the suppression of infectious swine diseases, but, your committee recognized the practical limitation of such a policy.

Your committee believes the time is ripe

for calling a special conference of state and federal officials engaged in hog cholera control work for the purpose of discussing at length and in detail policies and methods now practiced in hog cholera control and to formulate as far as practical uniform regulations governing the inter and intrastate movement of hogs for every purpose, and, last, but by no means least, reasonable restriction in the distribution of hog-cholera virus.

Your committee is of the opinion that proper control in the distribution of hog-cholera virus is one of the most essential factors of hog cholera control. In the effective administration of any law, responsibility and authority must go hand in hand. No officer responsible for the enforcement of any law or regulation can give a good account of his stewardship unless he is vested with the necessary authority; on the other hand no officer clothed with authority sufficient to enforce a law should seek to evade responsibility in any matter pertaining to the enforcement of such laws.

Generally speaking, police regulatory laws are popular principally with those who are not affected by the enforcement of such laws. Of those whose business it restricts or who are otherwise temporarily inconvenienced by the enforcement of a law, a majority are more or less hostile to such laws, to paraphrase this statement: "The law is unpopular," and unpopular laws, even though they are basicly sound and to the best interest of the masses, are difficult to enforce.

DISCUSSION BY DR. A. T. KINSLEY

The foregoing report is splendid. The committee has wisely made several suggestions which, if properly executed, would no doubt solve many of the difficult problems that veterinarians are contending with today. There are some portions of the report, however, that may profitably be discussed more in detail. It is stated in this report that the intrinsic value of anti-hog cholera serum in the control of hog cholera has been permanently established. On the other hand, it is apparent that the economic value of anti-hog cholera serum has not been properly placed before the swine breeders because only a small percentage of swine are now immunized. It is true the loss from hog cholera has been reduced, but would not the present loss from cholera more than pay for the immunization of the swine and thus insure a constant number of swine in the United States annually?

The Value of Bacterins Not Open to Question

The committee has made suggestions regarding bacterin and its application in the control of conditions in swine. It is possible that more direct statements could have been made, for only a few veterinarians still maintain that hog cholera is the only infective disease of swine. It is practically universally accepted that swine plague or porcine hemorrhagic septicemia is a distinct disease of swine.

The Bureau of Animal Industry blazed the trail for the immunization of animals against hemorrhagic septicemia in their experiments with buffalo in the Yellow Stone Park several years ago. Practically all authorities agree that hemorrhagic septicemia is practically identical, regardless of animals in which it occurs. Therefore, if immunization against hemorrhagic septicemia was of value in controlling an outbreak of this disease in buffalo and has since been found of value in controlling the disease in cattle and if the committee on hog cholera control did not have sufficient time to prove the value of the product, it might have at least given credence to established facts. The value of bacterins has been further proved in the immunization of stock hogs in public markets; at least, if the reports of fatalities from those sources are to be given any weight.

A National Swine Conference Desirable

It is universally conceded that there is at least a great diversity of opinion among veterinarians regarding the identification of the different diseased conditions found existing in swine, and there is a growing feeling that government and state officials have been negligent in not establishing experiments, in order to obtain evidence proving or disproving the various theories of swine diseases. It is hoped that the committees' suggestion of a "get-together" meeting may be followed in a short time, and that some definite plans will be evolved by which the chaotic condition now existing may be brought to a definite understanding, or at least as near a definite solution as is possible for men to achieve.

Authorities Have Not Supplied Needed Information Concerning Swine Diseases

There is no question but that some practitioners do not read as much as they should, and the statement of the committee that some practitioners depend upon information secured from reading publications sent to them by commercial concerns is absolutely correct. Regardless of whether the publications of commercial concerns are accurate or not, there has for some reason been a marked inactivity on the part of those in authority or control of infective diseases to supply literature or information relative to these various subjects. In fact, it is not long since hog cholera was the only infective disease mentioned in swine in the reports of authorities in charge of the control of infective diseases. It ill becomes the authorities to condemn the veterinarian, who may be seeking information from commercial sources, if there is no other from which he can obtain it. The courteous thing on the part of the authorities would be to commend those commercial houses that have been ethical and discreet in their published statements, and have furnished information that the practitioner needed.

Hog Cholera of Low Virulence May Exist

There is still some question as to whether or not there is a low grade type of hog cholera. It seems very probable that the virulence of the virus of hog cholera may be reduced with the result that the hog would be more resistant and the disease less active, and there appears to be no question from the reports of field investigators but what hog-cholera is in many instances associated with other infections, the combination resulting fatally when any one of the complications would be of insufficient virulence to kill the animal.

Virus Control Needs Careful Consideration

The statement made by the committee that succeeding pig crops under open range conditions offer less resistance to hog cholera, needs further substantiation. In some areas it would seem that this statement is not correct, and that each succeeding pig crop, so long as cholera infection maintains, becomes more resistant to the infection. We believe that stricter sanitary regulations are possible, and that this would be a very important factor in controlling not only hog cholera, but other infections in swine.

The committee has no doubt met with the approval of all the suggestions concerning the control of transportation of hog-cholera virus; however, such regulations must not be made for the benefit of any one individual or state sanitary officer, but for the good of the swine industry.

UNDOUBTEDLY INFECTIOUS ABORTION

I have a client who is having trouble with abortion in his hogs, or at least that is what it appears to be. He has four old sows which have aborted from two to three weeks after they were bred. They emit a whitish discharge similar to that which cows emit in infectious abortion.

Is there anything that can be given them, either as a medicine or as a bacterin? I would certainly appreciate some enlightenment on this perplexing matter.—L. F. N., Neb.

REPLY BY DR. KINSLEY: From your description of the cases, it would seem very probable that the sows in question are affected with infectious abortion. The specific cause of this disease has not been positively determined, but some experiment stations are now conducting extensive work along this line and it is probable that some definite information may be available in the not far distant future. Thus far we have been unable to obtain anything that is of value in the relief of these cases.

We should be glad to have you send in materials for microscopic examination, to see whether or not any specific micro-organism can be identified.

I would advise isolation of these animals and not to breed them for a period of perhaps two months, but we shall be glad to have further reports and specimens from you at any time.

PERIOD OF GESTATION IN THE SOW

Owing to a typographical error in the January issue of the Journal, the period of gestation in the sow was incorrectly given. It should have read "from 112 to 115 days."

STERILITY DUE TO PURULENT METRITIS

Sterility in sows due to what the breeders term "whites," possibly purulent metritis, produces the largest per cent of sterility in sows. Many besides breeders are willing to admit abortion does not seemingly occur in conjunction nor help to produce the sterility.

The only visible symptoms are emission of a white fluid and a decrease or disappearance of estrum.

Upon necropsy, the uterus is found somewhat dilated, walls flaccid, and lacking in muscular tone; mucous membrane thickened and pale, and containing a flocculent serous fluid depending on the duration of the infection. The fimbriated extremity of the fallopian tube may be in a highly inflammed condition.

Is or is not the disease infectious?

Autogenous bacterins have been used on these cases with undetermined success.—R. A. T., Ia.

REPLY BY DR. KINSLEY: The foregoing comments are worthy of due consideration. Purulent metritis, no doubt, is the condition that is indicated as the cause of sterility, and purulent metritis may be a sequel of abortion. Sufficient information is not available for us to say that abortion is the usual cause of sterility and if other than purulent metritis, which is a usual sequel to abortion, is found as a causative factor in sterility, we should be glad to have reports of cases.

Unless the causative organism be obtained in autogenous bacterin, it would be of no avail in the relief of these cases.

SWINE PLAGUE AND HOG CHOLERA

(Continued from Page 61)

Immunization Does Not Follow Single Attack

One attack of swine plague does not immunize against future attacks, as we have observed two herds in which certain hogs were infected twice. In hog cholera one attack protects against future attacks. To sum up, when we investigate a sick herd and have no history of an exposure to hog cholera in a herd which has been flushed with a high protein diet, suddenly showing thumps; lying on breast and when disturbed having violent fits of coughing and vomiting but are strong in gait, hair glossy, with temperatures ranging from 104 to 108 degrees on the first day of attack and the hogs which have been sick for two or three days with temperatures ranging between 103 and 104 degrees—these hogs coming back on feed—and we have no evidence of the extreme prostration which is characteristic of cholera, we make a diagnosis of swine plague. Blood injections from these hogs have shown us that we were not dealing with hog cholera. On the other hand with the history of cholera in the neighborhood and the advice that the disease is spreading gradually through a herd and when apparently well, though infected hogs show high temperatures and persistent high temperatures in the sick hogs with the extreme prostration, gaunt, arched back, diarrhea or constipation with the postmortem changes that we have regarded as characteristic of cholera; we have no hesitancy in making a diagnosis of cholera.

The mortality in swine plague in herds that we have observed has been very low, from naught to 5 or 6 per cent, the losses usually sustained the first twenty-four hours, while in hog cholera in untreated herds the mortality is usually very high. In the bred gilt, the tendency of swine plague to kill the fetus and later on to abort has been observed, and no doubt accounts for the excessive number of abortions this past spring.

In acute attacks of swine plague, immediate relief was given by taking blood from the tail, 5 c. c. per pound weight.

We have concluded that it is a mistake to inject virus when treating a herd with swine plague. Can we expect a tissue reaction to hog cholera virus with the formation of anti-bodies when the hog is already suffering from another form of septicemia? We have seen several herds so treated which were infected with hog cholera after the usual period of incubation.

Hog raisers should be educated to treat during the summer months when the pigs can get plenty of exercise and are not subjected to the predisposing causes which seem to provoke an attack of swine plague.

POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

Bacillus Coli Communis*

The B. coli communis has long been recognized as a constant and, I think we may correctly say, normal inhabitant of the intestional tract of our domesticated animals. It is very probable that the B. coli communis has some association with the various physiological functions of the digestive tract, and that this organism with others plays an important part in the digestion of proteins in the large intestines, which have not been acted upon by the digestive fluids in the small intestine. (Smith p. 221).

Recently, in both human and veterinary medicine, this microorganism has been looked upon as being of considerable importance as the cause of various lesions occurring in the body.

The cultural characteristics, results of experimental inoculations, the frequency with which the organism is found in the body tissues of itself and in association with other microorganisms, and the resulting lesions have all been fully and well described in our textbooks and journals. I, therefore, will confine my remarks in regard to the importance of this organism to a summary that would seem to me to be reasonably correct on a basis of what is known in regard to this bacillus and its invasion of tissues. First, I believe that we can conclude that the B. coli communis rarely, if ever, invades the deeper tissues except in case the structures with which this organism comes in contact are altered, thus predisposing them to invasion that under normal conditions is practically impossible.

In a very great per cent of the cases in which the B. coli communis has been found in the body tissues, either before or after death, it is possible to demonstrate that some abnormal condition existed that facilitated or made possible its migration into the tissues. The few cases in which this organism has been found in the deeper tissues of the body and in which the portal of entrance was not demonstrated, does not, in my opinion, mean that the organism penetrated the unbroken membranes or healthy structures of the body. It is far more probable that from functional disturbances or as the result of a minor lesion, the natural barriers were lowered to a point sufficient to enable the organism to gain entrance to the blood and deeper body tissues. The functional disturbances may have been so slight as to have gone wholly unobserved clinically or otherwise, the lesion being of such a nature or location as to go unobserved or healing leaving no gross evidence of its existence. The organism having once gained entrance to the body could easily pass through various channels and finally become localized, producing at the point of localization a change in the tissues characteristic of it, that is, inflammation, abscess formation, and possibly septicemia, although the septicemia so often attributed to the B. coli communis probably never takes place, except in those cases where the body resistance is materially lowered from other causes.

In some instances the B. coli communis may produce lesions more or less acute, but the great majority are chronic in nature,

*Read at 23rd annual meeting of the U. S. Live Stock Sanitary Assn., Chicago, Dec., 1919.

and the infection is finally overcome. Therefore from the standpoint of sanitation the B. coli communis can for all practical purposes be ignored because the animal body being in a state of health, and the disease conditions common to swine reasonably well controlled, the B. coli communis will naturally remain in its normal habitation, and the isolated instances where it may gain entrance to the body will be of exceedingly minor importance.

Lexington, Ky. W. W. DIMOCK.

TREATMENT OF STRYCHNIN POISONING IN A HORSE

Referring to the case of "Strychnin Poisoning in a Mare" described by Dr. A. R. Galbraith of Garfield, Washington, in the October issue of the AMERICAN JOURNAL OF VETERINARY MEDICINE, I wish to call attention to the very common error of using morphin as an antidote in strychnine poisoning in a horse. Strychnin increases spinal reflexes, and the convulsions, due to poisoning by this drug, are of spinal origin. This alkaloid is a slight stimulant to the medullary centers but in toxic doses is a marked depressant to the centers in the medulla; the respiratory center being the first to fail.

The action of morphin on the nervous system of the horse may be summarized by saying there is marked depression of the brain, and stimulation of the spinal cord. This is shown by increased movements and lack of intelligence, after administration of therapeutic doses of morphin to the horse. From this, one can readily see that morphin is a dangerous drug to use in strychnin poisoning because it depresses the respiratory and other medullary centers which are already dangerously depressed by the toxic action of strychnin and it further fails to antagonize the action of strychnin on the spinal cord.

The treatment of strychnin poisoning depends upon the condition of the animal. If convulsions have started, the animal should be kept as quiet as possible. Chloroform should be given by inhalation, artificial respirations being resorted to, if necessary. This overcomes the convulsions and also causes relaxation of the muscles. Chloroform should be used to start the anesthetic but should be followed by ether, which is less depressant to the respiratory center. Chloral hydrate should then be given per rectum.

When the convulsions are controlled, an attempt should be made to eliminate the poison. The stomach tube may be used, if the poison was taken per os. The chemical incompatibilities are tannic acid, which forms insoluble tannates, and potassium permanganate which oxidizes the alkaloid. Some have recommended potassium permanganate in 5 per cent solution to be used subcutaneously. It is said to form albumin manganic oxid with the serum of the blood, which has the power of decomposing the alkaloid strychnin.

College Station, Tex. S. N. BLACKBERG.

SCROTAL HERNIA IN A COLT

On August 6th I was called to see a colt, twelve days old, with the largest scrotal hernia I have ever seen. It was as big as a large dipper and reached almost halfway to the hock. I was satisfied it would never disappear without an operation, so I decided to operate.

I had the colt laid on his back with his hind quarters raised. Two assistants held the hind legs apart while I cut down on the sac and exposed the intestines and ring. I had some difficulty in returning the intestines. With that accomplished, I located the testicle and removed it. I next ligated the peritoneum and sutured the ring. Then I drew the fascia over and stitched it. The skin was sutured and the colt allowed to rise. I used catgut sutures all through.

The colt was turned into a large, clean box stall with its mother for two weeks and made a good recovery. The operation did not seem to annoy it very much. The wound healed up nicely, and at this writing there is no appearance of the hernia.

Owen Sound, Ontaria. R. J. NORTON.

METRITIS IN THE SOW AFTER NORMAL PARTURITION

This disease affects sows mostly after second litter and sows that give birth to a large number of pigs. I have never seen a case at time of first farrowing. Some sows are not as much affected as others.

This treatment I am giving was introduced by my son the late Dr. Walter G Boehme of Georgetown, Ohio, who intended to give it publicity but his career was cut short by death January 11, 1916, at the age of 29 years. This treatment has been carried out by his brother Dr. Edwin F. Boehme of Georgetown and by myself with good success for the last six years.

All sows affected recover in three to six days according to the severity of the attack. I doubt that metritis is the proper name for this disease. I think it is due to high development of the sow.

Symptoms: The sow gives birth to pigs without assistance, usually a large litter, and the afterbirth comes away naturally. The first day the sow does not eat much

but still takes care of her pigs. About the second day she lays flat on her side and will not eat. In a mild attack there is some milk for the pigs and they do not suffer much, but in a severe attack there is no milk. The pigs nurse but get no milk. They climb over the sow, run about and squeal for something to eat. Temperature is about 104° to 106° F. Breathing is short and quick. There is no discharge from the vagina and the parts are not swollen. The vaginal mucosa has a natural color and there is no straining. I have seen only one case under treatment where a piece of afterbirth was expelled the second day and three cases where there was a bloody discharge. All others showed nothing abnormal.

Treatment: The instruments required are a two-ounce dose syringe with a short and thick nozzle and a long slender nozzle; also a piece of rubber horse catheter two feet long. This is the best means for injecting the solution into the uterus as it is not too pliable and will not buckle. For injections I use two quarts or more of warm water and one-half dram of creolin. Insert catheter into vagina as far as it will go. Then have assistant with a syringe fitted with a long nozzle force the solution into the catheter. By rotating and at the same time moving the catheter back and forth it will slip into the uterus.

Insert the catheter twelve to sixteen inches and inject one to two quarts of the solution according to the size of the sow. Repeat the injection every four hours during the first day and every six hours the second to third day. The sows that get up during the injection of the solution will make an early recovery. I give tincture of aconite 20 to 30 drops three times per day by the mouth with heavy nozzle. If the sows do not get restless and fight I rely more upon injections than drugs.

Course and Termination: A sow with a mild attack will always give enough milk for her pigs until recovery. In a severe attack the milk flow seldom returns and the pigs must be fed by hand and most of them can be raised with a little patience. Feed the pigs with a teaspoon at first and then use a shallow bread pan two and one-half inches deep filled with fresh cow's milk. Tip the pan slightly and they will soon drink by themselves. Feed about every three hours, scalding the vessel before and after feeding.

HERMAN BOEHME

Batavia, Ohio.

MILK FEVER

Case No. 1. I was called to see a very fine cow, fat and in fine shape, sprawled in the stable perfectly helpless, twitching in a convulsive condition. She was expected to be fresh in 3 or 4 days. I diagnosed the case as milk fever and administered ¼ grain atropin, gave her the air treatment and directed that when she got on her feet to give her a pound of salts. The owner phoned me at 12:00 o'clock that the cow was up and eating some. I heard no more from the cow for about five days. I saw the owner later, and he told me the cow had come fresh and was getting along fine.

Three days later he called me and told me the cow was down in the stable just like she was before. I went and diagnosed the case as milk fever again and gave her the air treatment, and in two hours she was up and all right. Three days later I was told the cow was getting along all right. Two weeks later the cow was sold to a man of my town, who milked her about two months and she was in fine shape, as I saw her from time to time.

Then one morning I was called and told the cow was sick with colic. I could not leave the patient I was attending, so I gave the owner a prescription over the phone. He obtained the necessary medicine and gave it to the cow. Two hours later he called to say the cow was no better, the medicine was no good and when could I come on home as his cow was growing worse. I came on home as quickly as I could and found the cow lying out in front of the barn, perfectly helpless. I diagnosed the case as milk fever for the third time. I gave her the air treatment and advised giving her a pound of salts. In two hours she was up and apparently all right, and has had no trouble since.

Case No. 2. One evening I was called and told a very fine Jersey cow was down in the pasture and could not get up. I went and examined the cow and asked the owner when she would be fresh. He told me in about two weeks. I diagnosed milk fever, couldn't find anything else wrong with her. She was sitting up looking around as if she wanted to go home but could not get up. Her temperature was normal, her heart beat also normal. I administered the air treatment in the udder, left her and went home. In two hours the owner called me and said the cow was at the

barn and apparently all right. Two weeks later I saw him and he told me the cow was getting along fine and that she had come fresh.

Davidson, N. C. S. J. CHRISTENBURG.

ESERIN A SUCCESSFUL TREATMENT FOR IMPACTION

I rather have a "penchant" for Dr. R. M. Carter's ways of treating impaction in a horse. In a mild case of impaction I use eserin in one-half grain doses with pilocarpin one grain two or three times a day. In a severe case I use also some linseed oil. The longest treatment I ever gave was to a mare. It lasted three days requiring two calls a day. I never failed as yet in impaction, either in cows or in horses. For cows I use barium chlorid and the eserin and pilocarpin. It has succeeded very well.

For heat stroke, use plenty of cold water externally and camphor in olive oil hypodermically.

In diseases of the udder, phytolacca, by the mouth and in a salve locally with hot water poultice, has saved many a cow's udder for me.

Fairfax, Minn. S. J. ALCALY.

RADICAL OR ERRATIC OPERATION

A client called me to see a case of atresia ani in a male pig.

The condition was not discovered until the second or third week after birth. The owner noticed the "bloated" appearance of the pig and discovered the condition.

An incision was made in the perineum with a small nicking knife, and a search made for the rectum with a pair of tissue forceps, but I was unable to locate it. I then made an incision through the skin, muscle, and peritoneum in the right flank without regard to aseptic precautions. The rectum, or more probably the colon, was located with the finger and withdrawn through the incision. A catgut ligature was placed around the intestine and the intestine severed anteriorly. Gas and fecal matter of a very fetid odor and very thin consistency were passed in copious quantities. The bloating subsided and the intestine was sutured to the skin and abdominal wall with interrupted sutures of catgut. The patient was turned loose to live or die as nature saw fit.

This pig was operated on October 9. December 15th, the patient was still alive, hale and hearty, the second largest pig in a litter of eight. It defecates involuntarily through the right flank, apparently without control over the time of doing so.

At the time I had no idea the pig would live more than a few days after the operation, but I believe now that if it was not simply a happen so. The recovery was possibly due to my placing the sutures through the lumen of the bowel, the serous covering as well as mucous and muscular, through the peritoneum, muscles and skin of the abdominal wall and then through the entire wall of the intestine again.

P. T. ENGARD.

Marysville, Ohio.

CESAREAN SECTION IN THE SOW SUCCESSFUL IN FAVORABLE CASES

I am not one of these 100 per cent men on cesarean section in the sow, but can claim a record of over 85 per cent recoveries from the operation. I have operated in the wee hours of the morning and at high noon; in dirty low hog sheds and in the best hog houses—the place nor time seems to make no difference.

Here is my system, in brief:

1. Take sow's temperature; make a very unfavorable prognosis when it is over 105.4° F.

2. Examine to see if the pigs are still lodged in the pelvic inlet, for sometimes they may be forced out far enough to reach.

3. Put instruments into antiseptic solution.

4. Lay the sow on either side.

5. Tie front legs to a post or panel. Have the farmer hold the hind legs.

6. Clip, shave, dry and disinfect the flank.

7. Draw the urine.

8. Make one sweeping incision through the skin. This is the only point at which the sow will resist. Make incision four to six inches long.

9. Cut through the fat and muscles until the peritoneum can be seen; pick up the peritoneum with forceps and prick with a sharp point, then slit the peritoneum the full length of the skin incision wtih a probe-pointed bistoury.

10. Stop: Disinfect Hands and Forearms.

11. Feel for and locate the pigs. Grasp one pig in the hand and carry into the opening and work the legs to the outside. Then open the uterus over the pig.

12. If possible, bring all the pigs out through the first opening in the uterus. Sew up the uterus with silk sutures. Be sure to stop all leaks.

I use no anesthetics. Formerly I lost all sows when I used anesthetics. One sow which was operated on two years ago, has had four litters since and the owner says he is going to keep her till she dies.

CHAS. T. WINDRATH, D. V. M.
Humboldt, Iowa.

ACCIDENTS TO BLADDERS OF BOARS AND BITCHES

The subject, a boar, weighing 125 lbs., was to be castrated. The owner and I lifted him up by the ears over the side of a high pen, but he slipped partly back and forward on his abdomen on top of the fence several times. We finally pulled him over and laid him on his side, held him properly and castrated him, pulling out the cords. While applying pine tar, I noticed something slowly extruding, which upon examination I knew was not the bowels. In my curiosity to see what it was, I allowed it to become about the size of a large hen's egg, before I recognized the outer wall of the bladder. I vainly attempted to return it by slight elevation and manipulation, but it steadily and slowly grew larger and firmer. I bethought myself of aspirating it, which I did at a very acute angle, thus emptying it as it was very tense with urine. The hindquarters were elevated still more, and manipulating by pushing the now collapsed bladder toward the inguinal ring with my fingers, it dropped back into place. A few external stitches and pine tar finished the work, and there was a good recovery.

The second subject, a boar, weighing 75 lbs., was castrated eight hours before I was called. The owner stated that the castrators were very rough and pressed too hard with their knees on the pigs. I found this pig nosing around in the tall weeds and not appearing uncomfortable except from flies. A very red tumor, the size of an average orange, was extruded at the perineum. Its extreme redness and firmness might have deceived me, but from my experience with the former case I knew it was the bladder. We caught the animal and with a strong man holding him by the hind legs at an acute angle, I cleaned the tumor by bathing with antiseptic tepid water, and by manipulation tried to reduce it, but it was too full to be thus diminished. I aspirated as in the former case, and with a little long-fingered manipulation, the bladder passed through the inguinal canal. Several stitches and a thorough application of pix liquida completed the treatment. Pix liquida can't be beat for wounds in swine. (Dr. Alexis Carrel, Rockefeller Inst., N. B.) The termination of this case could not have been more favorable.

Readers may ask why these bladders extruded. I have reasoned it out satisfactorily to myself. Riding on the fence in the first case, and forceful resting or pushing on the abdomen with the knee of the castrator in the second case, caused these complications.

Once when castrating a ridgling boar, I accidentally and slightly nicked his bladder, which was greatly distended, thus allowing the urine to escape into the abdominal cavity. This I ignored and pro-

This intelligent looking Boston terrier, known as "William's Dolly" is a member of the Williams' Kennels. North Adams, Mass. She was bred in the Berkshire Hills, and is from prize-winning stock. Her two four-week old puppies are extremely short with square muzzles, stylish conformation, skulls broad and deep and fine silky coats. They are fine examples of aristocracy in "Dogdom."

ceeded as usual. He never missed a feed and did fine.

Similar accidents have happened in my practice twice while spaying bitches. In all three cases the nick was made in the fundus but was very small. I paid absolutely no attention to these accidents, and both animals made uneventful recoveries. I offer no excuse for such work, but simply want to show what may follow bungling performances.

If one studies the structure and relation of the fibers of the bladder, one finds a possible reason for such recoveries from slight wounds. I have never read or heard of complications similar to these I here record.

H. O. WARD.

MAD ITCH IN CATTLE FROM FERMENTED FODDER

Seeing in the Journal recently a mention of mad itch in cattle, called to mind some cases I observed in 1910.

I was then subscribing for the *"Veterinarian"*. The March issue had an article on mad itch by Dr. A. F. Nelson of Lebanon, Ind. He assigned the cause to eating corn husks, corn stalks, corn cuds that had been partially masticated by hogs and dropped out of the mouth, or swallowed and voluntarily ejected from the stomach.

Shortly after reading this article I heard of a farmer some miles from my home town who was losing cattle with symptoms very similar to mad itch. The farmer had called in a veterinarian from the adjoining town, who diagnosed it as anthrax and vaccinated without success.

Having never seen a case of mad itch, I obtained permission to visit the farm and study the disease. After examining one of the sick animals, I inquired if the hogs had been fed any green cane or corn. The reply was in the affirmative and I was shown the place of feeding. The ground was literally covered three or four inches deep with partially masticated cuds of corn stalks. Upon further inquiry, I found the cattle had free access to this partly digested and fermented material.

Upon my suggestion, the animals were kept from this material, and to the best of my recollection no more animals died. This has led me to believe that there is a toxin formed by bacteria on the fermented material, although it may be that these cuds offer a favorable opportunity for the Bacillus bovisepticum to take on unusual virulence.

I trust this will give some light on the disease.

Refugio, Texas

W. McGUILL

LEAD POISONING IN CATTLE LEADS TO PASTEUR TREATMENT IN OWNER

I was called by a client one morning, and on arrival at his place, found two dead steers. The history was about as follows: About three weeks before, one morning his little dog ran in, and instead of going behind the stove and lying down as was his custom, he ran around the room once or twice and had a convulsion. The man put the dog out and it ran around the house and had another convulsion. The dog was killed with a club. On going to the barn the owner found a cow acting very much as the dog had acted. He called an M. D. and shortly after his arrival the cow died. The M. D. decided it might be rabies and suggested sending the brains of the two animals to be examined. The report was that the dog was so mutilated that nothing of value could be determined, but that the cow had rabies. The owner took the Pasteur treatment for rabies, which was eminently proper.

Everything went all right until the evening before I was called, when the man found one of the steers with symptoms similar to those the cow had, and another steer standing around off feed and acting as though something was wrong. The next morning both were dead. This man had recently painted his house, barn, silo, and outbuildings and had thrown the paint cans in a ditch below the barn. In looking around I noticed the cattle had been licking the paint cans. Autopsy showed gastro-enteritis in both of the steers, the contents of the stomach somewhat light in color and those of the intestines black. This with the history and in connection with the fact that the cattle had been licking the paint cans, was very conclusive evidence to me that the steers died from lead poisoning. I told the owner so, and after taking care of the paint cans, he had no further trouble.

Without wishing to censure anyone, I am wondering if the cow that was reported as having rabies would have died if these paint cans had been placed where she could not have reached them, and if the dog would have had any more convulsions if it had been given some good efficient vermifuge. Or was it necessary for the owner to take the prophylactic treatment for rabies because some of his cattle died from lead poisoning?

A. D. GLOVER.

Newark, Mo.

EXTENSIVE NEOPLASMS IN A DOG

A bitch was brought into the outpatients' clinic with a history of vomiting, constipation, and of having swallowed a stone, which the owner said she was in the habit of doing. The bitch was very weak, and the abdominal walls tense and tender to pressure, temperature 103° F.; pulse weak and rapid. The tenseness of the abdominal walls prevented any attempt at palpation, so diagnosis was withheld, and I was told to do an exploratory laparotomy. On opening the abdomen, I was met with a fairly copious hemorrhage, which was rather disconcerting, but on examination the spleen was found to be ruptured and tremendously enlarged and studded with neoplasms. The spleen was removed after ligating the vessels, and the exploration carried farther. The mesentery of the small intestine was loaded with new-growths, and about three inches of the ileum surrounded with and occluded by neoplasms. As the condition was quite hopeless, chloroform was pushed and the patient allowed to sleep out of existence.

On postmortem examination new-growths were found in the kidneys, in the prepectoral lymphatic glands, and in the mediastinal glands. The liver was also invaded. It is remarkable that with this extensive invasion symptoms were so long delayed. It further shows how little one can depend on what the owner of the animal tells one.

In this case there was nothing in the stomach, and the intestines were also empty. I think the spleen was ruptured when the animal was put on the table, as otherwise she would have shown symptoms of internal hemorrhage. Cases of malignant new-growths appear to be quite common in dogs in this country, as we have had several since I have been at the college. Another very common condition here is endometritis in virgin bitches.

CHAS. G. SAUNDERS.

London, England.

UNUSUAL INTESTINAL DISPLACEMENT

I recently encountered an interesting condition in posting a hog which had been insured by a farmers' live stock insurance company. The owner noticed that the hog was not well in the evening when fed. It seemed bloated, but the owner said nothing about it, thinking it would be well in the morning. The next morning the hog was dead. He reported the case to the insurance company, they wired me to post the hog and report to them.

Upon opening the abdomen, I found the bowels badly inflamed and very dark purple. There was also a large amount of bloody water in the abdominal cavity. Further examination revealed the mesentery twisted into a rope, completely shutting off all circulation to the bowels. I had never before seen a case of this kind in a hog. Is it common?

Havelock, Ia. W. J. CLEVELAND.

TESTICLES SOMETIMES OVERLOOKED IN CASTRATING

In the July number of the Journal a writer stated that he had castrated a colt last season, removing two normal testicles; that the colt never lost his sexual desire, would serve mares and had one with foal, and the writer would like to know the reason for the behavior of the colt. I am offering as an explanation that this horse certainly has one or two testicles that have not yet been removed, probably in the abdominal cavity. I am not suggesting that this horse had more than the normal number of testicles, but there was undoubtedly a mistake in the number removed at the time of castration.

I do not wish to cast any reflection on the operator, but suspect he has done only a limited amount of castrating, as he states this was the first flanker he ever operated on. In a horse-raising locality, where

there is considerable castrating, we find quite a number of these cases every year. In an extensive practice in this line, it is not uncommon to find the epididymis five or six inches from the testicle. Either testicle may descend into the canal, the other remaining in the abdominal cavity. Had this condition been present and only the part in the canal removed, it would account for the disposition of the horse remaining the same. He would not get a mare in foal unless at least one complete testicle were retained. Might it not also be possible that this mare was gotten in foal by some other male?

I have a small band of horses that last year ran in a pasture in which there was no stallion. In a pasture across the road from my horses there was a two-year old colt that we castrated in May. In the latter part of the winter, I observed one of my mares that had not been bred was in foal, and I supposed this colt had gotten in with her. About the last of April, I went out one morning and found this mare with a mule colt. How she got it is still a mystery.

I will cite another case I had, showing how a man may be mistaken. A year ago last spring, I was called to operate on a ridgling horse. I told the owner how to prepare him, and set a time. I had never seen the horse. On my arrival at the place, I found a four-year old bay, which the owner said had been castrated by a man of twenty-five years' experience, and while he had a little trouble getting the testicles, he claimed that he got them both. But the horse continued to become more like a stallion until he got to be very unruly, and they decided he must be a ridgling. We cast the horse, and examination showed a scar on each side of the median line. There was nothing to indicate on which side the testicle might be retained, so we took a chance at the left side and removed a testicle from the abdominal cavity. Some time later the owner said the horse recovered nicely, but his disposition had not changed. I told him it might take some time but I thought he would come out all right. Last spring the client said the horse was no better and asked me to operate again. I removed a testicle from the abdominal cavity on the right side, and the operation proved successful in every way. It is needless to say that the man who operated on the horse first did not get either testicle.

It is my opinion that the case referred to in the July number was somewhat similar to the case just related, and if the owner will get some man who is good at this kind of work, they will surely find a testicle, possibly two of them.

A. D. GLOVER.

Newark, Mo.

MINERAL OIL FACILITATES REMOVAL OF DEAD FETUSES

I may mention here two cases which, to me, were interesting. I was called to see a valuable sow, weight about 500 pounds, that had been in labor about 36 hours. A manual examination revealed nothing but swollen and inflamed mucous membranes of the vagina. The labor continued at intervals. I told the owner that after thirty-six hours' labor the sow would, in all probability, die following Cesarean section. I therefore advised the injection of antiseptic mineral into the vagnia and uterus, every two to four hours, to lubricate the passages and facilitate sloughing of the dead fetuses. I also gave fluid extract of nux as a stimulant. My instructions were followed closely, sloughing was complete, and the sow recovered without bad results. Two months from the time treatment started, the owner told me that the animal had been in estrum and seemed normal in every way.

Havelock, Ia. W. J. CLEVELAND.

TRAUMATIC PERICARDITIS IN COW

I received a hurried call from one of my clients to come out to his farm, as one of his best registered Holstein cows had fallen dead, and he feared poison and was afraid some more would go the same way.

Upon arrival, after looking the cow over, I made a diagnosis of traumatic pericarditis. He said: "I never heard of that kind of a disease. What will they die of next?"

While I was posting the cow, a few more visitors arrived that had been "on the line" while my client was calling me, also to find out what the cow died of. One of the new arrivals said: "Doc, what

are you looking for? I can't see anything wrong."

The owner of the cow said: "He is looking for, what was that you called it, Doc?" "Traumatic Pericarditis." "Go to it, Doc, I never would be able to find it."

I pulled out a piece of wire six inches long, extending from the stomach through the diaphragm into the heart and the pericardial sac, and here I found four or five gallons of very offensive fluid. The heart weighed 24.5 pounds.

F. A. WALTERS.

Lemont, Ill.

OIL OF CHENOPODIUM FATAL TO PUPPIES

One of my clients desired a vermifuge for two valuable cocker puppies ten weeks old. I gave him five minim capsules of oil of chenopodium. After fasting each puppy received one capsule followed by castor oil. These were given at 10 a. m. At noon both puppies were found in a comatose condition. I saw them about 1 p. m. when the larger puppy (male) was in a very weak condition. He died that afternoon. The other survived until the following day. During the morning he was on his feet and ate but died later in the day. Net result—loss of two puppies and a good client. I have been using these capsules for a considerable time with good results. I have had no previous trouble even with toy dogs, except occasional nausea. Has any one else had a similar experience?

M R. P.

EVERSION OF THE RECTUM

In June of the present year, I was driving along a country road returning from a call when I was hailed by a farmer and asked to look at a mule. The patient was a nice bay mare mule, one of a five-year-old pair that had recently been purchased. The rectum was everted, the cause being unknown. There was a protruding mass about the size of an ordinary water bucket. It looked very red except in places where it was of a greenish color. The membrane seemed to be very much thickened and lobulated, the lobes being separated by fissures which were filled with feces, and the flies were swarming on the mass like bees in a gum.

The animal was placed in dehorning stocks and a twitch applied. The mass was washed thoroughly with antiseptic solution, and after considerable manipulation and applying some force with the closed fist, it was returned. I then applied a purse string suture of good strong material doubled. The mule was released from the stocks, placed in a box stall and instructions left with the owner to give no feed for forty-eight hours, then to feed only lightly. The owner was also advised that the patient might show colicky pains but to pay no heed to them.

The colicky pains came as I had predicted, but the animal made a complete recovery and has worked nearly every day since.

The rectum had protruded four days at the time of my arrival. It had previously been treated twice by empirics, so it is needless to add that my professional reputation stands at 100 per cent in that neighborhood.

Winfield, W. Va. REMBRANDT MORGAN.

URTICARIA IN THE DOG

While this disease is not of frequent occurrence in small animals, now and then a case is presented for diagnosis and treatment. It is characterized by sudden eruption of wheals of various sizes, sometimes attended by intense pruritis. The formation of these wheals is specially characteristic of urticaria. They may cover the entire body, but in small animals are more frequently confined to the head and the inner aspect of the hind limbs.

In the cases that I have observed, the wheals had coalesced, especially upon the head, the eyes being almost closed from swelling of the lids and conjunctiva. In small animals the attack is usually acute. There is little tendency to suppuration and ulceration. While it occurs at all ages or periods of animal life, the writer's experience indicates that the puppy and kitten are especially subject to it.

Etiology: Since the disease is infrequently met with, the cause in small animals is not well understood, but it is probably a reflex disturbance, resulting in a sudden, circumscribed exudation which is reabsorbed: or is the result of irritation of the peripheral nerves, giving rise to the idiopathic and symtomatic forms of the disease.

The causes may be external or internal. The former are those agents which act as direct irritants to the skin. The latter act within, and it is this form which is seen most frequently. The following are the principal internal causes, as observed by the writer: certain articles of food, as shell fish, pork, cheese, berries, fruit, etc.; certain medicinal substances, as copaiba, valerian, and turpentine. Sometimes no ap-

parent cause can be found. In animals, as in man, the individual idiosyncrasy of the animal plays an all important part in its causation.

Symptoms: The formation of the distinct wheals is characteristic; they may be round, oval or irregular in shape. The eruption appears to be produced by active congestion of the cutaneous capillaries, some serous effusion, and spasm of the muscular fibers of the skin. The effusion of the serum in certain localities is quite apparent from the edema which occurs. Characteristic is the rapid appearance, the short duration, itching, the rapid subsidence without desquamation. Usually the eruption vanishes as quickly as it appears. The local symptoms are for the most part, swelling and itching, more or less intense. From a diagnostic point of view, the sudden onset and swelling are of great importance.

Treatment: In urticaria due to recent ingesta of an irritating or indigestible character, an emetic is useful, followed by a saline. If there is much abdominal pain, as there sometimes is, opiates are indicated; if collapse, either ammonia, brandy or other stimulants are useful. The treatment may be stated to be expectant. Sometimes an emetic will cut short an attack, and to prevent a recurrence a saline should always be given. Atropin in one one-hundred and twentieth of a grain is beneficial in aborting attacks in small animals. For local use, to allay itching and irritation, cold water. hot water, vinegar, solutions of salicylic acid, and chloral, or ointments containing sedatives may be used. Peppermint water and cherry laurel water for small lap dogs act well. The diet for several days should be simple and readily digestible. Occasionally the wheals appear periodically, in which case. a few doses of quinin effect a prompt cure. Following these measures, the subsequent treatment, whether tonic or otherwise, depends on the condition of the animal under treatment.

The following cases are typical:

I was called to see two small puppies on which a rose-colored eruption was plainly visible. The owner states that the onset had been sudden without a premonitory stage. The pups were six weeks old and there had been no previous illness of any sort. They had been given some left-over milk oyster stew, and in about an hour one of the pups began to show the characteristic wheals, and a half hour later the other pup showed the same symptoms. At first the wheals were the size of a pea, increasing quickly to the coalescent stage, the head and face, swelling to almost twice the normal size, eyes nearly closed from the swelling of the lids and conjunctiva. There was intense itching, but no vomiting and no symptoms of fever.

Diagnosis: Urticaria. The treatment consisted of atropin sulphate, 1/120 grain. Equal parts of buckthorn and castor oil were given at once, followed in a few hours by a saline solution. The head and body were sponged with a solution of soda water. All food and water were withheld until the bowels acted freely. Both animals made a quick recovery and were sold three days after the attack. The cessation of severe itching after the use of atropin sulphate was an interesting feature of these cases.

OSCAR SCHRECK, M. D. V.
New Haven, Conn.

TRAUMATIC PERICARDITIS

In my experience the majority of these cases do not show edematous swellings or assume the characteristic position so frequently described. Recently I held autopsy on a cow found dead in the stable. This cow had not been ill, but autopsy revealed traumatic pericarditis.

I also recall a case which was destroyed after my diagnosis of traumatic pericarditis was given. This cow, which had been treated for inflammation of the intestines by another veterinarian, had been sick for a considerable time, but no edematous swelling was present and no typical position was assumed. Autopsy revealed ten or twelve quarts of puslike fluid in the pericardial sac.

I can recall many advanced cases showing no swellings or characteristic attitudes which on autopsy revealed traumatic pericarditis due to nails, wires used for attaching tags to feed bags, etc. Whenever I see a case exhibiting digestive disturbances, I try to examine carefully for symptoms of this disease.

Although not a case of traumatic pericarditis, the following experience with a foreign body may be of interest. I was called at 9 p. m. to deliver a calf from a cow that had been in labor seven hours. After some difficulty delivery was effected, but the placenta was not removed, the owner being instructed to notify me the following day if it was not

passed. Early the next morning, the owner telephoned that the placenta was still attached and the cow straining greatly. While removing the placenta, a four inch darning needle was discovered in the uterus.

Norwalk, Conn. M. RAY POWERS.

EDEMA FOLLOWING PROLONGED GESTATION

The history given was that a small swelling appeared in the region of the umbilicus about the end of the average gestation period. It increased in size rather slowly and had reached the size of a large dish pan when the colt was born.

Having encountered somewhat similar conditions on one or two occasions, the owner thought the swelling would disappear as the others had done, shortly after the birth of the foal. This mare had previously given birth to several colts without any trouble and the owner was confident this trouble would disappear in time.

The swelling continued, however, and about two weeks later it had reached the size shown in the picture. It was six to eight inches thick and interfered with the movements of the front and hind limbs. The symptoms were serious and a doubtful prognosis was given. The pulse was very soft and slightly accelerated. The membranes were icteric, the appetite fairly good, bowels sluggish. A physic was given and the mare put on a course of fldxt. colchici sem. tr. digitalis and fldxt. echinacea. Exploratory punctures made at several points elicited considerable serous fluid.

On a subsequent visit the owner informed me that drainage seemed to increase during recumbency, probably due to pressure on the parts. As part of the infiltrated fluid must have been more or less organized by this time, a resolvent liniment was applied over the entire region two or three times daily. The enlargement disappeared rapidly and in about two weeks was scarcely noticeable.

The mare was moved into another state the following winter, hence I am unable to say whether or not the condition reappeared at the next foaling time, but up to the time the animal was moved she remained in the best of health. I have not seen a case like it since.

W. P. BOSSENBERGER

Williams, Ia.

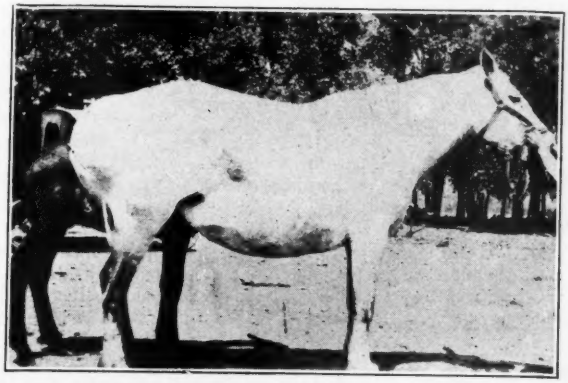
PURPURA HEMORRHAGICA IN A MARE

On the morning of October 8th, I was called to treat a brown mare, seven years old, weighing about 1,500 pounds. The owner informed me that the mare had been on pasture and he had not known of her illness until that morning, although a few days previously she had a mild attack of diarrhea.

On first observing the animal, she was sitting up like a dog; pulse 48 and of good character; temperature normal; membranes moderately injected; nostrils somewhat dilated; respiration hurried but not labored. Borborygmus was very pronounced but there was no tympanites. Defecation was suspended. The mare was in poor condition. The owner said she looked as though she had lost 200 pounds in two days.

Suspecting an engorgement of the stomach, I passed the tube. Lavage of the stomach, however, convinced me I was wrong. Rectal palpation disclosed a distension of the great colon with gas, and pressure especially at the pelvic flexure caused considerable pain. Other than this nothing was learned from the rectal examination.

I administered a capsule of chlorocamph anodyne, which quieted her very nicely. This was followed by an enema of warm water which she retained for some time. I then gave her a light dose of aloin, calomel, ginger and strychnin. Withholding both diagnosis and prognosis, I left fluidextract of nux vomica and sulphocarbolates, instructing the owner to give her one dram of the nux vomica and three tablets of the sulphocarbolates every three hours.



Well-developed case of edema following gestation.

Returning the next morning, I found her in about the same condition as when I first saw her, except she seemed to have an appetite and wanted to eat a little. She would remain quiet for perhaps half an hour, then start pawing, looking around at her side, lie down and roll, sit up on her haunches, remaining in this position for ten or fifteen minutes. She would then get up and want to eat. As there had been no evacuation of the bowels, she was given more enemas and received one pint of mineral oil administered through the stomach tube. The nux vomica and sulphocarbolates were continued.

On my return that evening, I found that the membranes were a little more congested and the pulse a little weaker but the temperature still normal. The dose of oil was repeated. I gave the owner an unfavorable prognosis and told him I would return in the morning.

The next morning the owner told me that the mare's bowels had moved twice during the night, only a little each time and that the passages were very soft. As there was a fair peristalsis, I administered one-half grain each of arecolin and strychnin hypodermically. This was followed by three or four evacuations, which were very thin, almost watery, but only a little each time. Those symptoms continued until the evening of October 13th, the mare eating a little, lying down and rolling, sitting up, and having perhaps two or three small evacuations in the twenty-four hours.

On my visit at this time, the abdomen was distended with gas; pulse very weak, almost imperceptible. I tapped her in order to give as much relief as possible and informed the owner that I thought she would be dead by morning and asked him to call me as I wanted to hold an autopsy. As I did not hear from him on the 14th, I drove out about 3 p. m. on the 15th and found the mare with as characteristic a case of purpura hemorrhagica as one ever looked at. I gave her 45 grains sodium cacodylate subcutaneously and left a prescription with the owner calling for the following:

℞—

Tr. ferri chloratis	℥iv
Potassii dichromatis	℥iiss
Aqua q. s.	ad Oi

M.

Sig. One ounce to be given every four hours.

The mare has received the sodium cacodylate every four days and at this time (October 25th) the swellings are subsiding, the pulse is strong, temperature normal and appetite good. However, there is some sloughing on the hind legs that does not look very good. These sloughs are being treated with an antiseptic wash and tincture of iodin. I believe that unless generalized septicemia develops from absorption, this mare will recover.

To me this seems to be a very unusual case, it being the only one I have seen in nearly twelve years of practice. Perhaps some of the readers of the Journal have had similar cases. I should like to know what the intestinal condition was. Were the intestinal symptoms caused by purpura in which the external manifestations were slow in developing? I am inclined to think that the purpra is a sequel to the intestinal trouble. At one time I thought there was a diaphragmatic hernia as I was sure I could hear some peristalsis in the thorax, but in this I think I was mistaken.

Loveland, Colo. I. A. PHINNEY.

FORAGE POISONING OR PLANT POISONING

I attended a case some time in October, 1918, that I have never thoroughly understood. I was called by a client, a dairyman who keeps about 40 head of purebred Holsteins. About three days before this, his herdsman had noticed one of the cows was terribly bloated and he went to the house and phoned for me, and when he went back to the barn he found the cow dead, and cancelled the call. When the second cow was found sick I was called and I found her as full as she could stick. I first tried to eliminate the gas by using a stomach tube but could not get any at all; then I used the trocar and got none, in fact used it three times, withot any benefit. Finally, the owner said "Doc, what would happen to a cow that eats walnut shucks?" I told him that I did not know, that I had never heard of cattle eating walnut shucks. But he said that his cows seemed to crave the walnut shucks and some of them were continually around the trees eating the shucks and leaving the nut. I really felt that I was up against a hard proposition, and as my client and his herdsman were chicken-hearted and neither seemed to be of any use around a sick animal, I made up my mind that the only thing that could be done was to perform rumenotomy on these animals and to do this I needed a first-class assistant. So I asked him to call a neighboring veterinarian. He was called, and by the time he had arrived I had everything in order for the operation, but he commenced to make an examination and said that he did not think it proper to perform rumenotomy on the animal as he thought she would die with septicemia as quite an amount of gas had collected under the skin, and when rubbing one's hand over the skin it would crackle like a piece of brown paper. He also made a rectal examination and seemed to think it was some western disease. I did not ask him just what he thought it was, but I thought he believed it was anthrax. He seemed to think she would soon die, and so the owner turned her out on the barn floor and all of us stood around thinking she would die at any moment. Finally

I spoke up and said that the cow would die just as happy if I was not there and went home, leaving barium chlorid to be given every hour in 30-grain doses. The other veterinarian also left.

The next day at noon my client called me and said that the cow was up and chewing her cud and the bloat all gone. I had their man call at my office for a stimulant to be given every two hours. This cow lived and got along nicely. But the third morning following there was another cow in this herd in the same condition as the one that I just mentioned. I was called, but being unable to get out, the neighboring veterinarian was called, and the herdsman told me before they were through there were three veterinarians there. After looking the situation over they found some old mouldy corn fodder in the manure pile, but whether it was the fodder or the walnut shucks that caused the trouble I do not know, but the shucks and fodder were removed from where the cows could get at it, and from that time on there was no more of this trouble on that farm.

I would be pleased to have someone tell me what they think was the cause of this trouble and the advisability of rumenotomy in a case where they cannot expel the gas through a stomach tube or a cannula.

Petersburg, Mich. H. H. GUY.

ADVANTAGES OF PRESCRIPTION WRITING OVER DISPENSING.

To attain the highest respect of our fellow men, we who have chosen the veterinary profession must do everything we can to impress upon them the fact that we have, like other professional men, spent years and money in equipping ourselves to be of service to them, and that it requires as much ability to diagnose and prescribe properly for the lower animals as it does to prescribe for the ailments of man. Also we must let them understand we prescribe and use the same kind of remedies that are used by practitioners of human medicine. I find that some people have an idea we use an altogether different kind of medication. There is too much superstition attached to the treatment of diseases of animals. I have been asked questions by medical doctors which made me ashamed of them, they were so silly. It seems they all lose their heads and forget that all medicine is based on common sense.

One way to impress the public with our scientific training is to write prescriptions. This gives us prestige, not only with our client, but with the pharmacist who can be of more service by speaking a good word for us when our name comes up as a subject, or someone asks for "Dooley's One Minute Bot Cure," than any one else in our town, because the public knows he is in a position to know better than they. And the majority of pharmacists will aid us in any way they can if we are in a habit of writing prescriptions, as that is the shortest and surest way to their hearts.

Writing prescriptions will also save time and money, for it takes time to fill prescriptions properly, and as it should be, the client pays for the medicine used, and when he pays our bill it will not look so large, for there is no drug bill attached, and we do not have to pay out a large part of what we receive for drugs used. And when you get fifty cents or a dollar for a prescription it is just that much, for you are selling knowledge and not medicine, and your stock is not depleted.

The public will also figure on the size package you dish out to them, and forget the fact you are selling brains. To illustrate: I have a friend M. D. who is a health officer of one of our larger Tennessee cities, who one time, as was his custom, wrote a prescription for a client and charged one dollar, which was paid without a murmur. Then thinking of a sample package of this same medicine he had, and wishing to aid the man, handed it to him. The man said: "Doctor, you surely are not going to charge me a dollar for this little package are you?" Get it? He was satisfied until he received the little sample bottle, forgetting he was paying for the fissures on the doctor's cerebrum.

Some will not write prescriptions because they write a bad hand, but bad writing is a compliment if they only knew it, for some of the

Double-headed calf, delivered by Dr. Fred Stoner, Momence, Ill.

writing of the best doctors I have ever filled prescriptions for looked like they attended a night school in writing, and could not write in the day time. Pharmacists are used to reading bad writing, and will not judge us by that, but by what we put in the prescription.

There are just a few things to remember in prescription writing: Get acquainted with your pharmacist, chummy with him. Ask him to get your some prescription blanks with your name, residence, office, telephone number, narcotic number, etc. Study the drugs used as to their compatibility, abbreviations, solubility, dosage. Then sell brains in the place of medicine, and you will have more of Uncle Sam's eagles when Christmas time comes.

R. H. SMITH, D. V. M., Ph. G.
Cornersville, Tenn.

RESECTION FOR TETANUS IN HOGS

I wish to assure you that I appreciate the October issue of VETERINARY MEDICINE very much. Many of the case reports appearing in the Journal are very practical, and I often get just the right idea from them; for instance, regarding tetanus in swine practice. Recently I have been treating some typical cases of tetanus in hogs. Our textbooks give little light on this subject. In discussing the subject with Dr. Harrison of Springfield, Missouri, I find he has had good success in completely resecting the cordlike growth where tetanus is a sequel of castration, removing the growth even though it seems to aggravate the case at the time. Most hogs will recover if not too far advanced before the treatment is resorted to. Antitetanic serum does not seem to give very good results in hogs.

Brookline, Mo. W. O. HODGE.

PROLAPSED INTESTINE SUCCESSFULLY REPLACED

I recently received a telephone call from a client residing about twelve miles from the city, stating that he had just discovered that one of his horses, a five-year-old mare, had been gored by a cow sometime during the afternoon, that a portion of the bowel was protruding, the appearance of the wound indicating that the accident had occurred from one to two hours previous, and desiring to know what, if any, were the chances of recovery. I informed him that the prognosis in accidents of that nature was not favorable. He decided, however, to have an examination and either operate or destroy the animal as seemed feasible.

I arrived at the farm about 5 o'clock in a snow storm with the wind blowing a gale. Examination disclosed about 12 inches of the small intestine protuding from a small punctured wound about five inches anterior to the stifle joint; intestine swollen, very dark colored and cold.

Operation out of doors was out of the question, owing to the weather conditions. The only place available for casting the mare indoors, was a space about seven feet wide back of a row of single stalls. The floor was covered with clean straw, and giving the mare one ounce chloral hydrate by the mouth, with the assistance of the owner, a neighbor, and a small boy holding a kerosene lantern, the mare was cast.

The hair was clipped around the wound as well as possible without injuring the protruding parts and the parts thoroughly cleansed with a mild antiseptic solution. The snowstorm had been preceded by rain and the animal was literally covered with barn yard mud and manure and the cleansing process required several pails of hot water. Effort was then directed to the return of the prolapsed intestine, but the opening through the abdominal wall was so small, and the bowel so badly congested that it was impossible without enlarging the opening. A probe pointed bistoury was carefully introduced and the opening enlarged sufficiently to permit the return of the hernia. The wound was then closed with three, deep interrupted sutures, through skin, muscle and peritoneum, the edges of the wound being brought in apposition by a few superficial sutures through the edges of the skin. Tincture of iodin was applied to the surface of the wound, also an antiseptic dusting powder.

The animal was released and led into a single stall and tied so that she could not li down. She appeared fairly bright and gave no evidence of acute pain or shock. The owner was instructed to give the animal plenty of fresh pure water and feed lightly for a few days if inclined to eat. I also directed that the surface around the wound be irrigated two or three times daily with a 1-2000 bichlorid of mercury solution, taking care not to disturb the

sutures or edges of the wound, and apply dusting powder after each irrigation.

After the second day the appetite was good with normal action of the bowels, and the patient made a perfect recovery. The only evidence of the injury is a slight thickening of the abdominal wall at the point of injury. W. G. CLARK.

Marinette, Wis.

STEFFEN'S TREATMENT UNIFORMLY SUCCESSFUL IN IMPACTION OF RUMEN

No better short article on impaction of rumen in cows could be written than that in Dr. Steffen's "Special Cattle Therapy." If one does any cattle practice, and does not have this work in the library, there is a void that should be filled.

I have never been able to improve on his medicinal treatment, viz., fluid extract nux vomica and salol. From experience, I heartily agree with him that the usual "salts" have no place in the treatment of this impaction.

However, in the majority of my cases, I am called after the case is of some days' standing and resort to the "rumenotomy outfit" as often as to medicinal treatment.

This outfit, which has made the old rumenotomy operation 90 per cent unnecessary and almost obsolete, is very valuable to me.

After breaking down the impacted mass and removing a sufficient quantity I introduce a full dose of fluidextract nux vomica and some antiferment through the canula and have had no bad results from the procedure.

I have never failed to succeed with the medicinal treatment outlined by Steffen when I reached the case before it was too far advanced.

Maiden, N. C. J. E. HODGES.

DIAPHRAGMATIC HERNIA

I was called to see a horse with the colic. I found the animal, a large grey mare, very restless at times and very quiet for short periods. After an hour or so she seemed better. I gave a narcotic and stimulant and left several doses to be given as needed.

The following morning the owner called me to come at once, saying that he feared the horse had pneumonia. On arrival, I saw the animal was in a dying condition: depressed attitude, weak and staggery, pulse almost imperceptible, eyes glassy, cold clammy sweat, respiration short and labored. Auscultation on the left side revealed no sound. The animal died within an hour. Postmortem disclosed a small opening in the left dorsal part of the diaphragm, smaller than a silver dollar, through which ten or twelve feet of intestines had crept. The intestines were distended with gas, almost completely filling the left side of the thoracic cavity. The intestines were black from strangulation from about four feet from the stomach back twelve or fifteen feet, stopping short as though squarely cut off. O. F. FOLEY.

Bridgewater, Va.

STOCK FARMS OFFER OPPORTUNITIES FOR VETERINARIANS

For the past year I have practiced at Escondido, Calif., but now have accepted a position as veterinarian and stock superintendent at Lilac Ranch. This is a fine two thousand acre ranch, sixteen miles from Escondido, devoted to raising pure bred stock—Percheron horses, Aberdeen Angus cattle and Poland China hogs. This ranch was recently acquired by Mr. Geo. V. Kirkwood, a banker of South Pasadena, Calif., who is improving it in a permanent and substantial manner, and we intend to make it one of the leading pure bred ranches of the West.

I wish to emphasize the fact that our veterinary colleges should include plenty of animal husbandry work and prepare the veterinarians to meet such people as Mr. Kirkwood. I was called on immediately after he located here for advice in feeding and care of stock, also in selection of pure breds and their management. Thanks to past experience and what animal husbandry work I had had, coupled with my recent posting up on the subject, the result is that I now have a fine position with a fine man in a fine business. Veterinarians should get busy along these lines as there are many pure bred ranches that will use them.

Escondido, Calif. C. A. NOGGLE.

TREATMENT FOR FORAGE POISONING

I am using the following treatment in forage poisoning and am having fine success. Last year I had 56 cases, although three of them I did not treat as I considered it useless. Out of the 56 cases, I lost 13 counting the three I refused to treat. I give the following:

℞—

Aloes Barbadensis	℥iss
Ol. zingiberis	grs. ii
Pulv. ipecacuanhæ	grs. iv
Hydrargyri chloridi mitis	grs. xxx

M. et fiat in bolos No. 1.

Sig. Give orally if able to swallow. (If not, I use arecolin.) Then I give 30 c. c. mixed infection phylacogen subcutaneously, repeating in three days if necessary. If the animal is frenzied, I give fluidextract of gelsemium, one

ounce, and leave some with the attendant to give if required to keep the animal from hurting itself. As a final eliminant, I give potassium iodid, two drams, three times a day in the feed.

If the patient is stupid, I give one grain strychnin subcutaneously and leave some nux vomica to be given if needed.

I have tried a number of other drugs, but the above have proved their worth.

C. H. NOFFSINGER.

FORAGE POISONING MAY NOT BE CORRECT DIAGNOSIS

In the matter of forage poisoning, a subject on which there seems to be scant knowledge available, I have only a suggestion to make, and that is as to the treatment. I give iodin, intravenously, two drams of Lugol's solution in two or three ounces of normal saline solution, injected into the jugular once daily.

Also in other cases, I use the hemorrhagic septicemia bacterins, prepared from strains of the organism of equine source. Lesions that I have found on autopsy of these cases indicate the use of this bacterin. Some do not believe this condition is due to bacteria, as they are usually found with a subnormal temperature; however, I have found that in the first stage they often show from one to three degrees of fever, the temperature becoming subnormal in from 24 to 96 hours. Perhaps some cases diagnosed as forage poisoning in horses are in reality hemorrhagic septicemia; remember our change of opinion in the matter of corn stalk disease in cattle.

The eliminative treatment, such as cathartics and diuretics, together with intestinal antiseptics, and stimulants to combat the profound depression and weakness of the patients, has been a failure in my hands, as has also the permanganate of potash and alum treatment.

Monticello, Ind. H. FAIRFIELD.

ELEPHANTIASIS RESULT OF ABNORMAL BOWEL CONDITION

A few days ago I observed a peculiar case, of a ten-year-old mare that had been destroyed because of elephantiasis in one hind leg.

An examination of the viscera showed a four-inch passage leading directly from the pyloric end of the stomach into the diaphragmatic flexure of the great colon. The stomach was of normal size, but the great and floating colons were about twice their normal diameter. The small intestines were unusually small in diameter, and apparently shorter than they should be. They contained a quantity of bile, but no ingesta. They appeared to be about the size they should be in a newborn foal.

My idea is that the small intestine and the cecum never developed, because unused, for all of the food eaten by the animal, obviously passed directly from the stomach into the colon by way of this abnormal passage. That the animal was born in this condition, is borne out by her history. She had always been emanciated, and unthrifty; and she had never, even while a foal, evidenced any desire to run or play. She had always had a voracious appetite, which she never seemed quite able to satisfy. With drooping head and ears and staring coat, her only ambition seemed to be to drag her emaciated carcass from one feeding point to another.

Worden, Ill. M. V. BURGETT.

MALIGNANT EDEMA IN A MULE

Mare mule, four years old, weight about 1100 pounds; affected July 11th. The owner said the mule had been idle for some time, when he hitched her and a mate to a tongue cultivator and plowed corn all day. The next morning, her neck just in front of the withers where the collar rests was swollen extremely with radiating cordlike swellings, and the temperature was slightly elevated. The owner said he expected the animal would die as he and his father had lost four mules afflicted similarly, and this mule was worse when treated than the others were. The mule being so soft, sweating freely and the day being so hot, the parts were probably scalded or practically cooked.

Treatment consisted of a complete resection of the dead nonsensitive tissue, which was larger than two fists. The cavity was swabbed out and filled with a strong tincture of iodin. The remaining swelling was painted and injected with iodin in several places. Considerable iodin may be injected without producing iodism. The swelling was painted with iodin for three days before improvement could be noticed, non-progress of the disease being the encouraging factor. To induce healing of the wound, I used powdered alum for two treatments, followed with healing powders and iodoform, an agent I found excellent to keep flies away and stimulate healing.

The mule recovered nicely much to the owner's surprise and mine, for I have lost several cases, although the treatment is the best I have found.

Brookline, Mo. W. O. HODGE.